CODING THE URBAN FORM

A Thesis
Presented to
The Academic Faculty

by

Dana M. Habeeb

In Partial Fulfillment
of the Requirements for the Degree
Dual MArch, MCRP in the
College of Architecture

Georgia Institute of Technology
April 1, 2008

CODING THE URBAN FORM

Approved by:

Richard Dagenhart, Committee Chair
College of Architecture
Georgia Institute of Technology

Richard Dagenhart, Advisor
College of Architecture
Georgia Institute of Technology

David Green
School of Architecture
Georgia Institute of Technology

Michael Dobbins
School of City Planning
Georgia Institute of Technology

Date Approved: April 1, 2008

To Mom and Dad

Tommy and Carla,

And James.

ACKNOWLEDGEMENTS

I want to thank my committee for all their time, help, and thoughtful criticism. My committee was a constant source of encouragement as well as a wonderful educational resource. I specifically would like to thank my advisor, Richard Dagenhart, for his unending patience and guidance through this entire process. I have learn a great deal tackling this challenge and this process would not have been half as enjoyable without the support of my committee. I would also like to thank CUH2A, specifically Mike Mottet and Yun Lee, for continually supporting me through my graduate career specifically through my thesis. Your support and constant encouragement has always been a source of strength for me. Last but not least I want to send my warmest appreciation to my entire family, for each has helped me in their own special way. And a special thanks to James Clawson who now knows more about American subdivision than I think he ever wanted to know. I want to thank James for being the best editor and sounding board anyone can ask for. Thank you all for believing in me and please know that I appreciate everything that you have done for me.

TABLE OF CONTENTS

DEDICATION iii

ACKNOWLEDGEMENTS iv

LIST OF FIGURES vii

I INTRODUCTION 1

II PROPOSAL 3

2.1 Proposition 3

2.2 Methodology 4

III SUBDIVISION 6

3.1 Introduction 6

3.2 Private Property 6

3.2.1 The Constituion: Life, Liberty and Property 7

3.3 Standardization. The Critical Ingredient of the American Landscape 9

3.4 National Land Ordinance 11

3.4.1 Gunter's Chain 11

3.4.2 National Land Ordinance 13

3.4.3 Creating Typology from Standardization 21

IV PRIVATE PROPERTY 26

4.1 Introduction 26

4.2 Buildings 26

4.3 Building Typology 30

V PUBLIC PROPERTY 36

5.1 Introduction 36

5.2 Zoning 37

5.2.1 New York City's 1916 Zoning Ordinance 37

5.2.2 Euclidean Zoning 40

5.3 Structure vs. Substance 41

VI CODING OF THE BUILT ENVIRONMENT 42

6.1 The neighborhoods of study 42

6.2 Virginia Highland 44

6.2.1 Identifying the Site 44

6.2.2 Situating the Site 45

6.2.3 Typologies 55

6.3 Cabbagetown 71

6.3.1 Identifying the Site 71

6.3.2 Situating the Site 73

6.3.3 Typologies 83

VII SUMMARY AND CONCLUSION 94

7.1 Neighborhood Comparison 94

7.2 Regulation Analysis 96

7.3 Conclusion 100

APPENDIX A 5^{TH} AND 14^{TH} AMENDMENT 102

REFERENCES 103

VITA 105

LIST OF FIGURES

1 Gunter's Chain. 12

2 The Northwest Territory. 14

3 The Ordinance Grid. 16

4 Philadelphia. 17

5 Savannah. 17

6 The L'Enfant Plan. 19

7 1811 plan. 20

8 Street grading in the 1811 plan 21

9 On the left (a) is the San Francisco Grid while on the right (b) is the San Francisco Block. 23

10 The lot arrangement. 24

11 On the left (a) is the vara lot while on the right (b) is the vera block. 25

12 An example of balloon frame construction. 27

13 Mortise Tenon joints. 28

14 Both figure (a) and (b) illustrate points made my Moudon in his analysis of San Francisco. 29

15 Hunter illustrating the effect of the ranch house on lot size. 30

16 This matrix illustrates the housing typologies that exists in both neighbors and shows how the typologies are distilled into categories for coding purposes. 33

17 This matrix illustrates the apartment typologies that exists in Virginia Highland and shows how the typologies are distilled into categories for coding purposes. 34

18 This matrix illustrates the whether the typologies (housing and commercial) exists in Virginia Highland and/or in Cabbagetown. 35

19 Commissioners' grid in lower Manhattan. 38

20 1916 NYC height districts. 39

21 The setback line established in the 1916 zoning resolution helped control the maximum mass of buildings. 39

22 Neighborhood Site Map 43

23 Virginia Highland Site Boundary 44
24 Virginia Highland site map with numbered blocks and street names. . 45
25 The Nine Mile Trolley connecting Virginia Highland to Atlanta . . . 46
26 1872 Map 47
27 Historical Defining Elements 48
28 1896 Baylor Map. 49
29 Virginia Highland subdivision from 1893 to 1917. 51
30 Subdivision evolution from 1903 to 1925. 52
31 Above (a) 1932 parcel map; Below (b) 1932 figure ground. 53
32 The natural elements of topography and stream beds 54
33 Street map. 56
34 Thoroughfare typology. 57
35 Connector street typology. 58
36 Through street typology. 59
37 Local street typology. 60
38 Block Typology 61
39 Block typology key map. 62
40 Block distribution map. 63
41 Building distribution map: Above (a) Porch distribution; Middle (b) Apartment and duplex housing distribution; Below (c) Commercial distribution. 65
42 Housing typology. 66
43 Virginia Highland has a variety of housing typology dispersed throughout the neighborhood. 67
44 Apartment typology. 68
45 Commercial typology. 70
46 Cabbagetown site map with numbered blocks and street names. . . . 71
47 Defining elements: Above (a) Transportation elements; Below (b) Natural elements. 72
48 1878 subdivision map. 74

49 Elevation drawings of the the tenement housing that the mill provide on it's factory lot. 75

50 The property throughout Cabbagetown that was owned by the mill. . 76

51 These images illustrate how Cabbagetown's subdivision evolved. . . . 78

52 Above (a) 1899 parcel plan; Below (b) 1899 figure ground. 79

53 Degradation over time of the regular subdivision of lots. 80

54 Above (a) 1911 parcel map; Below (b) 1911 figure ground. 81

55 Above (a) 1932 parcel map; Below (b) 1932 figure ground. 82

56 Street typology map. 84

57 Thoroughfare typology. 85

58 Connector street typology. 86

59 Local street typology. 87

60 Housing typology. 89

61 Housing typology subset. 90

62 Distribution of housing typology throughout the neighborhood. . . . 91

63 Commercial typology. 92

64 Building distribution map: Above (a) Porch distribution; Middle (b) Apartment and duplex housing distribution; Below (c) Commercial distribution. 93

65 The comparison illustrates the large extent that Cabbagetown changed overtime. 95

66 The comparison of house distribution between Virginia Highland and Cabbagetown. 97

CHAPTER I

INTRODUCTION

Prioritizing the analysis of residential developments should be consistent across the board. Housing developments account for the majority of all new developments taking place in the United States. The landuse dominance of housing makes it one of the most important components that effect the composition of cities and is why more attention should be focused on housing construction and the development of neighborhoods as a whole. Unfortunately, this is not taking place as throughout the United States quickly assembled modern suburban neighborhoods are basing building practices on maximizing profits without regard to either community or sustainability. There is a gradual move away from this type of development with the market showing more support for intown historical neighborhoods.

New developments situated in neighborhood units throughout the United States are lacking the complexity and variety found in historic neighborhoods built before the onset of building and land regulation. Ironically this problem continues to manifest in neighborhoods governed by regulations with intent to assimilate historic neighborhood characteristics, such as Historic Preservation Codes and the New Urbanisms SmartCode. In order to be easily implemented, these regulations are standardized into generic codes so that they can be used in myriad places. This standardization process allows for the ease of adoption and implementation but often ignores the existing cultural and historical properties that contribute to the creation of the local area. In turn, these regulations are falling short of their intended goals by creating uniform environments that lack complexity by not representing their specific locale.

Regulations like the SmartCode and Historic Preservation Ordinances are based

on the intention of making and maintaining "good" places. Both regulations realize that historic neighborhoods exhibit good qualities, which is why SmartCodes try to emulate these characteristics and historic preservation ordinances try to maintain them. Unfortunately, neither of these regulations sufficiently define what these principles are. The urban environment, past and present, has been engineered to an extent and it is this engineering process that has standardized many elements of the urban environment. These urban elements are the clues that can be used to help write more effective codes. The process of standardization has been successful for implementation because it lowers the level of expertise needed to execute the everyday environment, which inturn creates more efficiency. This can be seen with the Gunters Chain and the Jeffersonian Land Ordinance, as well as in the use of the grid iron block system, balloon frame housing and even Euclidean zoning. If we can identify what these engineered principles are then we can begin basing rules appropriately around them, but always remembering that context and everyday ingenuity cannot be codified, therefore we need to leave room for creativity for the next generation.

CHAPTER II

PROPOSAL

2.1 Proposition

What are the essential characteristics that constitute historic American neighborhoods? Do current regulations promote developments that exhibit these essential characteristics? In this thesis I analyze two historic neighborhoods in an effort to uncover their architectonic principles. By identifying the key components that comprise these places, we can critically analyze whether regulations, such as Historic Preservation Ordinances and the SmartCode, are adequately designed to govern development practices of residential neighborhoods.

Historic Preservation codes idealize aesthetics. These codes base unit of analysis is building style not building typology, which leads to a series of problems that come from basing criteria on aesthetics instead of the overall form and envelope of a building. Additionally, historic preservation regulations under prioritize the subdivision process. The subdivision process is the initial step of any historic American neighborhood and dictates the arrangement and distribution of a neighborhoods components (blocks, lots, buildings, streets, pubic spaces, etc.). By deemphasizing this process, the regulation overlooks an essential characteristic of any neighborhood. The utilization of the "compatibility rule" within these regulations is intended to allow variation in a context specific manner. This attempt at complexity is not working, however, because it limits the context to only the block face and it limits the range of variation of a buildings element to that of only 10 percent within the block face.

Though the SmartCode begins to address the problems of historic preservation codes by utilizing typology instead of style as the base unit of analysis, it still falls

short of its intended purpose by over simplifying component types. This simplification of component types can be seen in block, building and street typologies and even the overall description of the neighborhood unit. This oversimplification of component typologies imposes a rigid prescription on new developments though this is not its intended effect. The codes also do not use context specific natural characteristics, such as topography, to help define rules governing the typology characteristics. This lack of context specific rules further contributes to the generation of generic spaces by not recognizing the physical characteristics of a place within the regulatory framework.

Historic preservation codes and New Urbanisms SmartCode are designed to maintain and create places that exhibit characteristics similar to those found in historic neighborhoods. However, these codes do not succeed, primarily due to dramatic oversimplification that comes from a lack of understanding of what constitutes well designed historic places. These regulations do not require sufficient research and documentation to reveal the unique characteristics that comprise places and in so are creating places that instead of being rich in character are simplified, much like the regulations used to create them.

2.2 Methodology

For the thesis, I conducted a detailed morphological analysis of the evolution of two historic Atlanta neighborhoods in an attempt to uncover their urban architectonic principles such as building typologies and subdivision processes. I analyzed the neighborhoods from three different categories: subdivision, private property and public property. The subdivision category consists of blocks and lots; it is the process that divides land into it the public and private domains. Public property consists mainly of the streets but also includes parks, and community buildings, such as schools, churches, etc. Private property includes both residential and commercial buildings and an analysis of how these buildings help to define the public space.

I began this process by conducting an historical analysis to uncover the principles that helped dictate how American cities evolved. Specifically, I examined the role of subdivision, public and private property on the development of the built environment. Doing so enabled me to determine what elements need to be prioritized in the documenting process so that they can then better inform land regulations.

I choose two Atlanta neighborhoods, Cabbagetown and Virginia Highland, because both neighborhoods were built prior to land regulations and were initially built for middle class residents. In my empirical research documenting these two neighborhoods, I examined the spatial and recorded history of the two areas. To examine the spatial history, I graphically analyzed how the areas changed over time through an analysis of Sanborn maps, GIS (geographic information system) data, deed and plat records and historic land auction maps. The Sanborn Maps were scanned and recreated using CAD (computer-aided design) software so that the data could be analyzed more effectively. I collected data on the recorded history through reading historical references. I documented the current conditions of my focal areas, examining the morphology of the urban form with regard to the relationship between the subdivision of territory, and the public and private domains. I graphically document the study area according to block and street types, the design of the public space such as streets, parks, and public buildings; and the typology and design of private buildings. All data in this section was collected though empirical observation of the areas of study.

CHAPTER III

SUBDIVISION

3.1 Introduction

Subdivision is the process of dividing land into the public and private domain through the use of blocks, lots and streets, with streets belonging to the public sphere and lots belonging primarily to the private. The subdivision process is one of the most important components of the built environment. This process not only dictates how the public and private domains communicate but also determines how other components such as building typology and land uses are distributed throughout the urban form. When conducting an empirical documentation of two Atlanta neighborhoods, I analyzed how each neighborhood was subdivided overtime and investigated the resulting subdivision to determine whether these elements, or even the historical subdivision process itself, could be utilized in identifying the tacit code that could create each respective neighborhood.

3.2 Private Property

Subdivision, as previously stated, is the process of dividing land into public and private property, but the understanding of private property, as Americans know it today, has not always existed. The right to own property is a modern American construct that has been evolving since days of the American Revolution. It is one of, if not the main, motivations for the separatist movement that launched the revolution. The right to own property is embedded in the notion of what it means to be an American. This idea permeates through the culture and even throughout the laws as seen in the constitution. Private property has significantly influenced the development

of the United States, from its laws, to the ability to rapidly settle the western frontier with the National Land Ordinance and to the design of American cities with the grid iron block system.

The concept of private property heralded a fundamental shift in thinking from the colonial city. "The idea that land might be treated as property belonging to an individual, to be traded, borrowed against, and speculated on like any other commodity"[16] happened during the process of colonizing the Americas and culminated with the American Revolution. In the colonial period, the feudalistic government suppressed land rights. Feudalism deemed "that the land was the state, and only the head of state could own it outright."[16]

Prior to the American Revolution, land grants were created by the King of England and given to individual companies. In colonial cities, such as Philadelphia and Savannah, land was subdivided and regulated by a single individual. This was a period prior to the right of private property for every individual. The right to own land was a privilege granted by a feudal king to privileged individuals.

The unique and harsh characteristics associated with settling the Americas, helped to bring about a change regarding ownership of property. The opportunity for independent wealth was one of the main driving forces which allowed people to take such great risks crossing the seas to settle a wild and foreign land. The colonists conceived of land as a commodity ripe for speculation and profit. The strict feudalistic notion of only the few owning property began to gradually erode. After the Revolutionary War, this type of regulation was impossible to maintain due to the fundamental change in the concept of private property.

3.2.1 The Constituion: Life, Liberty and Property

> "The great and chief end, therefore, of men uniting into commonwealths, and putting themselves under government, is the preservation of their

property." John Locke, An Essay concerning the true, original extent and end of civil Government, London, 1690

The American Revolution changed the way property was controlled and distributed. Though this change gradually evolved on its own through the process of settling, the American Revolution cemented the notion of private property when the colonies broke ties with the King of England and declared a new state. After the American Revolution, there was no higher entity, not the king nor the state, that owned the land. Land was seen as the right of every eligible voting citizen. America "was a place where any white male immigrant could get ownership of land and use that land as capital to make a future for himself. America was the land of opportunity. To be an American was to own and control private property."[11] Private property was not just a matter of fiscal importance. Many landowners believed that owning property meant more than simply possessing a commodity, it represented the freedoms of a new type of government in a new and different country. Thomas Jefferson was primarily responsible for connecting democracy with the individual landowner. "To Jefferson ... the possession of land was the Newtonian principle that made a democratic society work. It guaranteed the independence of the individual and gave each one an interest in building a law–abiding community." [16] Jefferson's idealistic vision for America was to create a country of independent farmers. He took this ideal from the yeomen farmer of the prefeudal Saxon period. Jefferson believed that if people could be independent by living off of their own land, then no one could buy their vote. This independence for the citizens would create a non-corrupt democratic government, "because ownership of land gave the owner economic and thus political liberty."[11]

The Declaration of Independence symbolically represented the common belief amongst the colonists in their right to own property, but it was the Constitution of the United States of America that actually protected these individual rights against

their newly created government. The writers of these documents believed in the importance of empowering the individual against the government. Property was seen as a check on the governmental powers and therefore a means of creating the democratic citizen. Protecting property was one of the main reasons that united colonists to form an independent state and was an evident step in creating their new government.

The United States Constitution included special provisions to protect an individuals property from the power of the federal and state government. These provisions are seen in the Bill of Rights and the Amendments to the Constitution. The Fifth Amendment includes what is known as the "takings clause" and "the public use doctrine" represented in the following quote: "nor shall any person be deprived of life, liberty, or property, without due process of law: nor shall private property be taken for public use with out just compensation." This amendment requires that land cannot be taken without "just compensation" and that, if taken, the land must be allocated for public use. The definitions of "just compensation" and "public use" are vague concepts that are debated in the U.S. Supreme Court to this day. The Fourteenth Amendment reinforces the requirement of due process of law before a person can be deprived of their property and that equal protection must be given to all people:"nor deny to any person within its jurisdiction the equal protection of the laws" (The full text of the Fifth and Fourteenth Amendments are listed in Appendix A).

The Declaration of Independence and the Amendments to the U.S. Constitution are the legal documents which have formally instituted the idea of private property as a fundamental ideal of the United States. This notion influences settlement patterns of the United States and fundamentally effects the built environment.

3.3 Standardization. The Critical Ingredient of the American Landscape

Sixteen and one half feet and two inches by four inches(nominal) are two of the most important dimensions that have historically shaped the American Landscape. From

the beginning of the colonization of the Americas, the process of standardization occurred across different scales of development. The standardization of surveying of land and the standardization of the balloon frame construction (which will be further discussed in Chapter 4) can be distilled to the their essential primary unit, and it is these seemingly arbitrary dimensions that their process builds from in order to form the standards which are vital for understanding the American built environment.

These standards were critical elements in allowing the vast amount of land of the newly constructed United States of America to be quickly settled and inhabited. As previously discussed, private property was seen as an essential for the evolution of a democratic society. Every citizen needed access to this land in order for Jefferson's formula to take place. Lack of land was not the problem, the problem laid in the ability to orderly sell/give this land away in a method that would allow the individual to claim the land as his own and therefore claim rights to that land without dispute. The other problem was the difficulty building dwellings needed to inhabitant the land. Land that was far away from industrialized cities and in areas where materials were sparse made this process more difficult. By evolving a standard for surveying land in the 1600's and a standard for processing lumber to nominal dimensions and formulating a new building strategy around this standard in the 1800's, the American territory was able to be quickly consumed and dwelled on by the new American citizens.

These standards dramatically impacted the built environment because of their massive range of impact. This extensive range was due to the ease of execution of the standards. Both processes were effective because they limited the amount of skills and knowledge necessary to effectively execute the processes by using a simple language that could be translated by the average individual. The gunther chain was the necessary tool used for surveying and the 2"x4" was the necessary lumber needed for the balloon frame construction. The gunther chain took away the need to know

latin and complex mathematics and the 2x4 took away the need to be able to hand craft(carve) joints from large timber. It is the process of standardization that turned formal language into slang allowing for the ease of design, assembly and translation to occur which in turned helped shape the American landscape as we know it today.

3.4 National Land Ordinance

3.4.1 Gunter's Chain

"Without measure, music was noise, poetry babble, and the land wilderness."[16]

With regard to private property in the United States, standards were needed to easily allow the individual to own land. The American built environment evolved in a specific manner due to a standardized measuring system. This evolving pattern came about due to the agreement of measurement through the use of Gunter's chain and the creation of a universal method for organizing territory in the land ordinance. By standardizing a measurement system, land could be measured and therefore could be easily bought or sold. By measuring land with a constant and unchangeable dimension, an economic value in currency could be associated with land and it could be treated as a commodity. Without this measurement and the means to survey, the ability to effectively own and sell property (without conflict or taking too long) would be incomprehensible.

In the 1600's there was not a standardized or precise method of measuring land because, prior to this point in time, there had been little need. Land was measured according to how much capital (head of cattle, or ears of corn) it could produce, and land boundaries were measured by a system called "metes and bounds". "To 'butt' upon something is to encounter or meet it, for which the equivalent word was mete. This ancient method of surveying, which identified the boundary of an estate by the points where it met other boundaries or visible objects."[16] As to be expected, this system was not very reliable or methodical. Measuring land in this manner may be

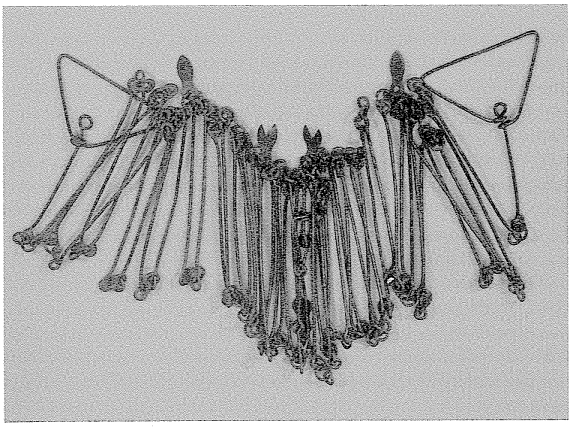


Figure 1: Gunter's Chain.

adequate for small parcels but become completely unreliable and create confusion when used on large quantities of land.

Edmund Gunter, an English mathematician, created many mathematic tools but the tool that he is most famous for surveying chain known as Gunter's Chain, which became the measurement standard not only in England, but also in colonial America (see Figure 1).

The chain combined the current English measurement system based on multiples of four with the newly documented decimal system. The chain's length was the equivalent of four perches– representing the English system, and was divided into ten groups of ten links each (100 links)– representing the decimal system. The entire chain totaled 22 yards or 66 feet.

The physical design of the surveying tool also added to its popularity. By using chains and not rods, the tool could conform to different terrains, and by making the chain of metal its length did not shrink or stretch during use. This design yielded a more accurate and consistent measurement. Plus, since it was easy to carry it over one's shoulder, it was easy to move around and use in the field.

From a purely incremental perspective, this measurement system does not make much sense; one link measured less than 8 inches, and the 22 yards (66 feet) seems

arbitrary. However, from a historical point of view, the system is quite elegant. In the English system, a perch was a land measurement unit representing a quantity of agricultural work. A "daywork" was "the area of agricultural land that could be worked by one person in a day". This area was equal to 2 perches by 2 perches or 4 square perches. One acre is defined as "the area that could be worked by a team of oxen in a day", and was equivalent to 40 dayworks and could be measured by 10 square chains in Gunter's system. 640 acres made up one square mile. All of these measurements are multiples of four, which made "it simpler to calculate the area of a four-sided field."[16] Surveying measurements made on–the–go were easier if the distance could be doubled, halved or quartered, and mathematic calculations were easier to compute using a decimal system. Gunter's chain represented more than merely measuring land; it represented the act of creating private property.

3.4.2 National Land Ordinance

The ability to claim land was an integral part of colonizing the Americas. To determine who owned the land; the colonial powers and as well the companies who developed the English colonies had to measure the land in order to establish a legitimate right to it. Different methods were used to measure land such as the Metes and Bound system, but Gunter's chain became the primary tool used for surveying land because of its ease and practicality. Because of its extensive use, Gunter's chain became the primary surveying tool. The dimension of the chain (22yards) became an integral part in the creation of an organization system (later to be known as the National Land Ordinance) that defined how more than 3 million square miles of the United States would be organized.

After the American Revolution, the newly formed United States gained possession of the former western British territory. This area of land, bounded by the Mississippi River, came to be known as the Northwest Territory through the enactment of the

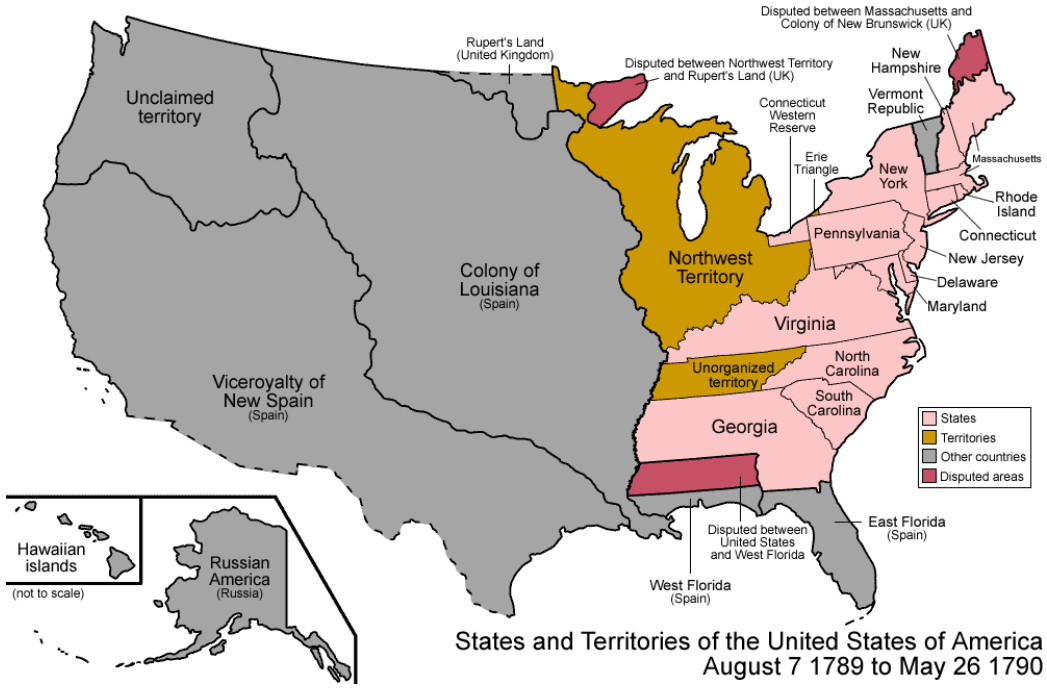


Figure 2: The Northwest Territory.

Northwest Ordinance by the Congress of the Confederation in 1787 (see Figure 2). This swath of land represented a source of wealth for the new yet poor country and a means of implementing the democratic dream of creating a nation of landowners. Jefferson was adamant that the land had to be measured before it could be sold. This may seem like an obvious request, but to land speculators, this organizational approach limited their ability to claim the most valuable land. At previous times, when there was no systematic approach to divvying up land and the metes and bounds system was utilized, speculators would claim territory in odd shapes and immense sizes. Often these plats of land were actually multiple times larger than their documented sizes and their odd shapes could have upward of 100 sides. This unorganized approach created a jigsaw puzzle of land plats, which often created odd, left over pieces of land.

The U.S. government agreed that there should be a systematic approach to measuring and subdividing the Northwest Territory, and they created a committee to lead

this process, and elected Jefferson as its chair. Jefferson came up with a plan of how to divide the land into territories, which would eventually become states, and how to divide these territories into plats that could be transferred to the general public. The new territory borders would be rectangular and follow the parallels of latitude and the meridians of longitude. The land internal to the territories would be organized in square plats with boundaries running north/south and east/west following the pattern of the individual territories. Jefferson also proposed that the land be measured with a decimal system of measurement that he was in the process of creating. In Jefferson's mind, "unless the transfer was kept simple, Jefferson felt, the speculators would subvert the process to their own ends. Because no shape could be simpler than the square, and no calculation more straightforward than in 10s, the land had to be surveyed in rectangles and measured in decimals."[16]

The majority of Jefferson's recommendations were implemented into law as the National Land Ordinance. However, the decimal system did not make the cut. Instead of Jefferson's decimal system, a method was devised for measuring the land into units of length easily charted off using Gunter's chain. The tool defined the method of organization and 22–yards (the length of Gunter's chain) became the primary unit of the system. The land would be organized into square Townships of 36 square miles. Each township would be divided into one square mile sections, and sold at a rate of \$1/acre or \$640/section. "The advantage of a square measuring 6 traditional miles by 6 was its ease of subdivision for someone using Gunter's chain. Each side measured 480 chains, a number that could easily be halved, quartered, and so on, according to demand"(see Figure 3) [16].

The National Land Ordinance was used to measure more than just the Northwest Territory. The system was used to organize all land ceded to the United States from this point forward. This system of organizing territories with a square grid extended from the Ohio River west to the Pacific Ocean and connected Mexico in the south

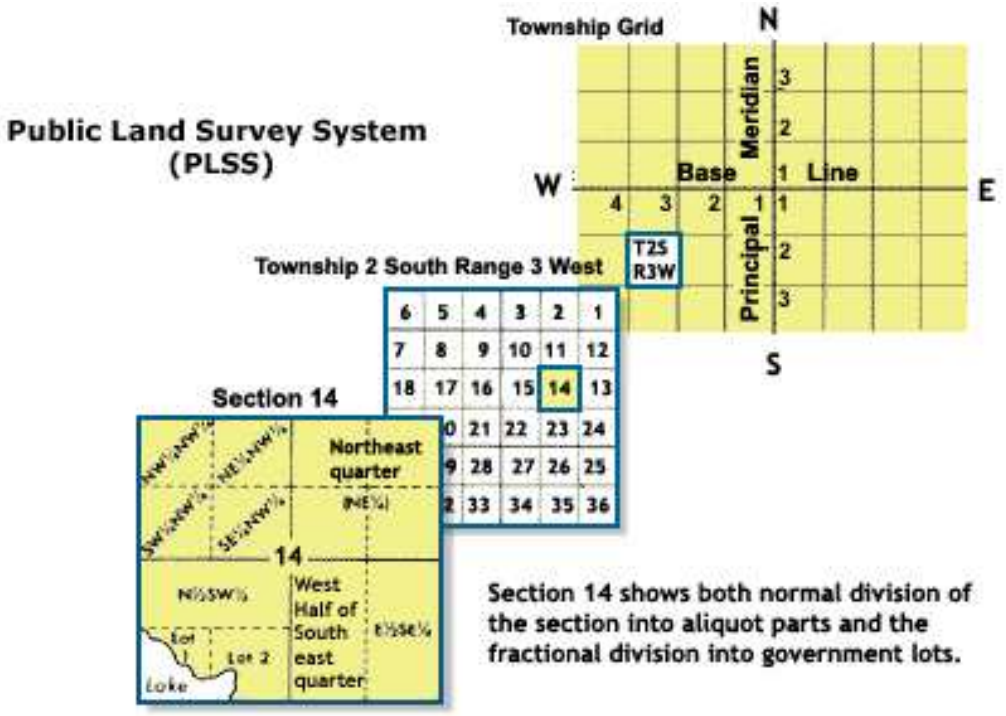


Figure 3: The Ordinance Grid.

to Canada in the north. The National Land Ordinance would "create a structure of landownership unique in history, and would provide the invisible web that supported the legend of the frontier with its covered wagons and cowboys, its farmer and gold miners, and would insidiously permeate its formation into the unconscious mind of every American who ever owned a square yard of soil."[16]

3.4.2.1 The Gridiron Plan

The same principle used to organize the vast, unsettled American West was also used to organize urban areas of the pre-regulated city. Only colonial cities, such as Philadelphia and Savannah had established organizational frameworks that systematically divided the land into public and private spheres, prior to the actual habitation of the city (Figures 4, 5). Now that the majority of the land was owned by the private sector, an overarching framework was more difficult to implement than ever before because of the myriad stakeholders invested in a city. New cities created after the

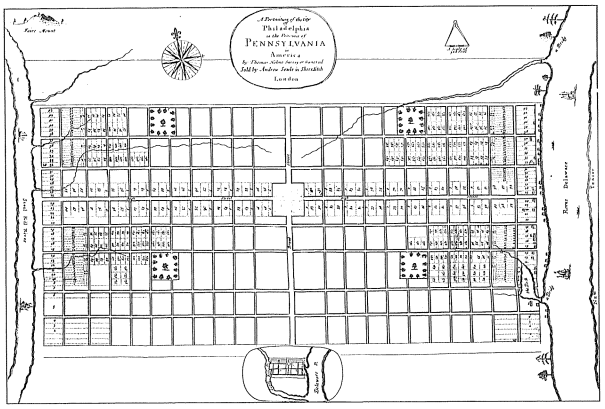


Figure 68. Plan of Philadelphia, Pennsylvania: 1683

Figure 4: Philadelphia.

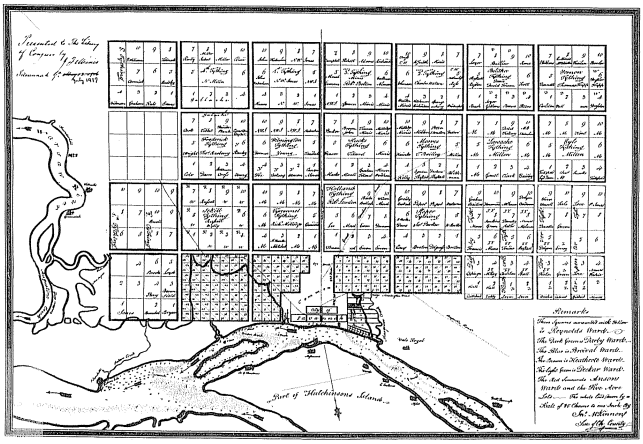


Figure 79. Map of Savannah, Georgia and vicinity: ca. 1800

Figure 5: Savannah.

Revolutionary War, such as New York City, were pieced together over time as the cities grew. The lack of organizational structure became quite evident due to the chaos and confusion of the resulting cities as populations continued to increase at exponential rates.

The organizational framework of a rectangular grid, associated with the National Land Ordinance, was established on the smaller urban scale through the implementation of the gridiron plan. I take New York City as a case study and analyze the process of organizing a city with this device. The organization of territory, through the use of the gridiron plan, established a predictable order to the current chaotic city so that it could better deal with anticipated urban growth.

Before the 1811 plan, New York had an irregular system of subdividing territory which led to an irregular street pattern with odd shaped parcels. The lack of framework promoted traffic congestion and inefficient navigability. The irregular framework made it very difficult for New York to provide street frontage to parcels and therefore made these parcels non–sellable. In 1811, city councilmen agreed that they needed a comprehensive plan. This plan would direct developer investments to hopefully produce a more orderly city that would benefit the health and wellness of the citizens. They agreed they needed a street plan, one that designed future streets as well as civic spaces.

The purpose of the plan was to create a functional framework, not to produce a design element as was Pierre L'Enfant's intention for the design of Washington D.C. (Figure 6).The framework of the plan consisted of narrow rectangular blocks with parallel East/West and North/South streets. The commissioners decided not to introduce elements that would break up the rigid pattern of the grid, such as diagonal streets or circles as seen in LEnfants plan. "In considering that subject, they could not but bear in mind that a city is composed principally of the habitations of men, and that straight sided and right angled houses are the most cheap to build and the

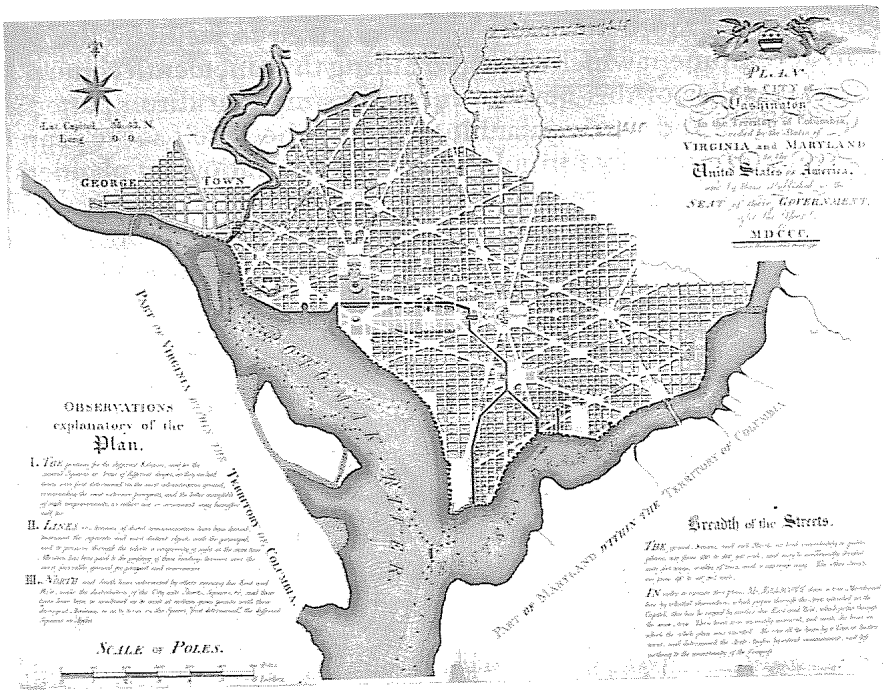


Figure 6: The L'Enfant Plan.

most convenient to live in." The plan was a simple grid (see Figure 7), which began at the old city in the south and spread northward toward Harlem. The east/west streets were 60 feet wide and spaced 200 feet apart while the north/south streets were 100 feet wide and spaced approximately 900 feet apart. The east/west streets small distances created the narrow ends of the rectangular blocks in the grid system. These streets connected the two waterfronts, and therefore it was assumed that they would generate increased traffic between the two rivers. The plan also defined property lines which would clearly define the public Right of Way and not just the cart way of the street.

The plan failed to grade streets to the existing undulating terrain (See Figure 8) and also failed to resolve the problem of interrupting the natural drainage system with the insertion of the grid. The commissioners chose not to regulate population densities, land uses, or building volumes. "Unwilling to define future development in exact terms, they were content to create an open context where private development as well as public life would be attended with the least inconvenience, leaving it largely

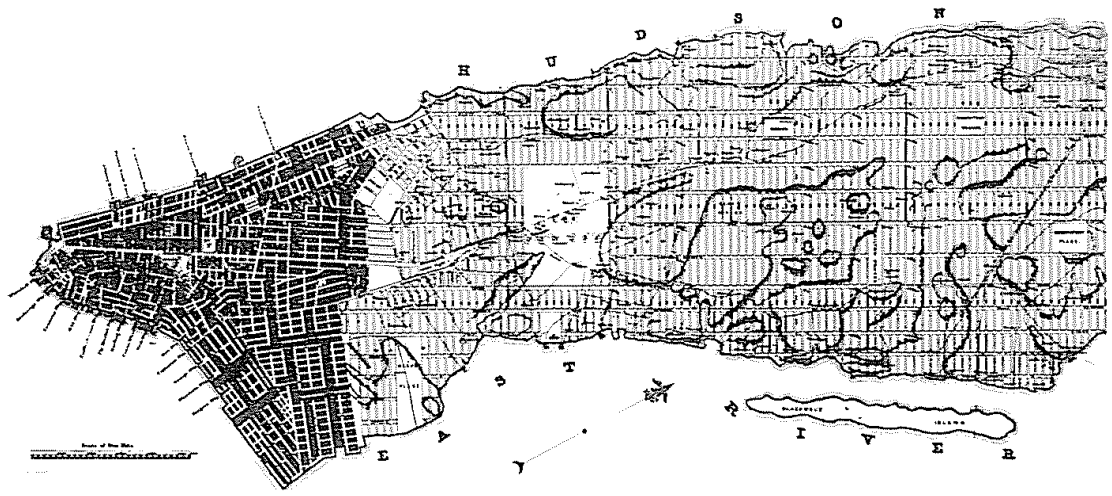


Figure 7: 1811 plan.

to individuals to fill in the empty blocks and to give details to the future city, subject to such regulation as might later seem necessary."

The framework inserted a predictable order to the city and allowed individuals over time to change the internal components of the framework as they saw fit. Open space was removed and added depending on demand, though profitability usually drove these decisions. Streets were added to increase the number of properties with street frontage, and lots were divided to be able to include more buildings.

"For Randel and most other New Yorkers, the enhancement of real estate under the plan was linked to the progress of the city; the grid guaranteed public interest as well as private profit. In an American city, where a democratic government was to protect and not to interfere with individual rights, planning was to encourage private ambition and effort within the general limits of an ordered freedom. Essentially, the grid promised to promote the rapid development of Manhattan along lines which protected the future against the mistakes associated with the old city."

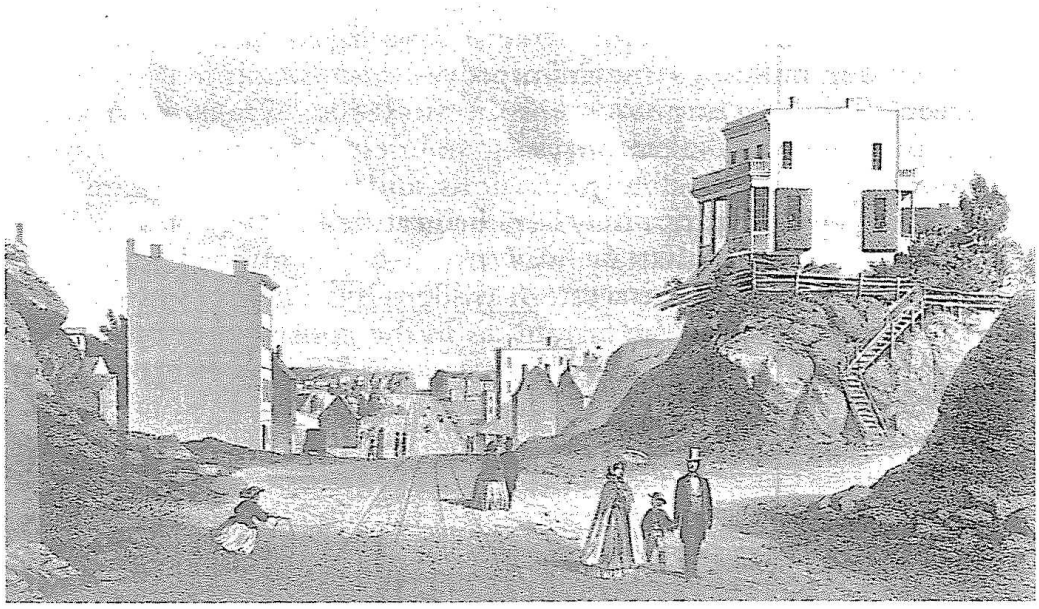


Figure 8: Street grading in the 1811 plan

3.4.3 Creating Typology from Standardization

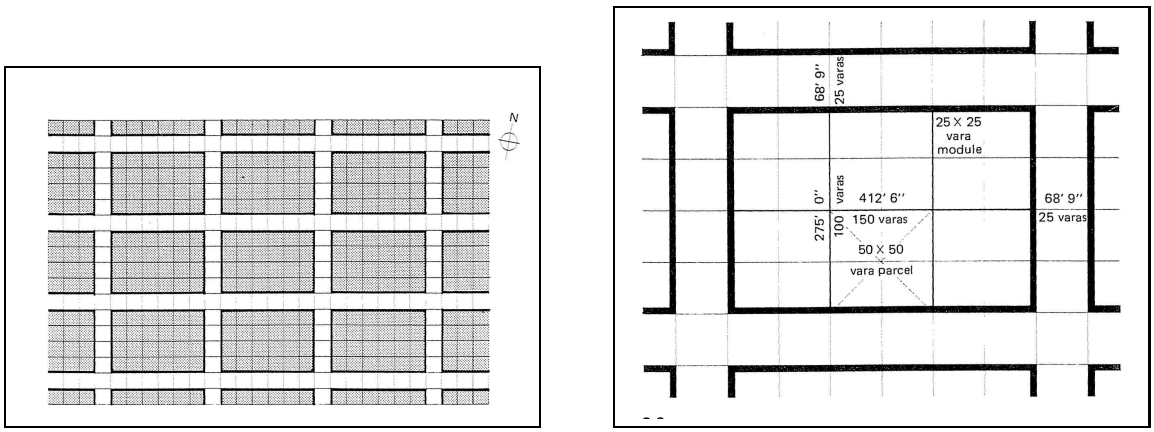
3.4.3.1 Blocks and Lots

An urban framework organizes the territory of a city into the public and private domain. The dimension and shape of the framework help to determine the typologies of urban elements such as blocks, lots, and buildings and how these elements fit within the framework. This organization is both a top down and bottom up process. The framework helps to define the elements or cells that make up the city and the elements help to define the framework. "Changing the properties of cells (elements) will eventually modify the city; changing the structural relationships according to which the cells are linked will also effect the city." The economic motivation of a city can further influence the dimension of the elements. For example, in San Francisco, it was common practice to decrease the size of blocks in order to accommodate more lots at smaller dimensions and therefore more houses. In addition, alleys were often inserted in the middle of blocks so that smaller lots could be created, therefore making them more affordable by decreasing the value of the parcels.

The structural relationship of how cells are linked is the primary function of an urban framework. We have explored the concept of frameworks and now we will examine the elements within the framework. So far we have examined how a framework can organize territory on a large regional scale with the National Land Ordinance and how a framework can organize territory on an urban scale with the use of the gridiron plan. Now we will look at how a framework can organize territory on the neighborhood scale through an examination of the ways in which the elements (blocks and lots) of a framework are related to the dimensions of the framework.

The subdivision of land regulates the distribution of parcels to the public at large. The organization of individual parcels regulates the location and position of buildings. The arrangement of buildings is what in essence creates a city. I examine Moudon's exploration of a San Francisco neighborhood, Alamo Square. Moudon documented and analyzed how the neighborhood changed over time. Moudon writes that "the quality of the environment depends not only on its age but also, importantly, on the fact that it has changed continuously over time." She extracts from her research "the importance of subdivision of land in shaping city form and in controlling the nature and the extent of changes over time."

Further subdivision of the urban framework continues to define the shape of the built environment. The dimension of the framework dictates the size of the blocks, which in turn dictates lot sizes. In Alamo Square, the original subdivision of the land was the gridiron plan. "The original gridiron, which drew the line between public and private territories, not only dominated patterns of change, but also remains as an indelible footprint of city form." Moudon argues that while examining the historical change of the neighborhood, the small lot is the overlooked element of the framework that significantly contributed to evolution of historic cities like San Francisco. She noted that "smalls lots as territories of ownership affected building form and change. These lots are important mechanisms regulating city form."



(a) (b)

Figure 9: On the left (a) is the San Francisco Grid while on the right (b) is the San Francisco Block.

Through her research, Moudon clearly illustrates how a tools dimension can be the building block of an urban framework. Since the Spanish settled California, they used a different measuring standard and therefore a different survey system to organize the territory. The measuring standard was the vara, and the land was surveyed with chains 100 vara long. A vara equaled approximately 33 inches, and 25 vara was the unit that defined the grid structure for Alamo Square.

Moudon illustrated that the gridrion framework could be broken down into a grid of modules where a module is 25 X 25 vara. The grid defines the public and private territories by defining the dimension of the streets and blocks. The street widths were generally 25 varas or one module wide and the blocks were 150 X 100 vara (see Figure 9(b)) or 6 modules X 4 modules (see Figure 9(a)). The blocks were divided into 6 square parcels (50x50 vara). As the population increased and in turn the density increased, the parcels could be divided into smaller lots. The long dimension of the block was oriented in the east/west direction aligning with the cities main circulation patterns. This dictated that the majority of the housing alignments would be in the north/south direction, which would further support this circulation hierarchy.

The further subdivision the blocks, it was only natural to divide the 50x50 vara

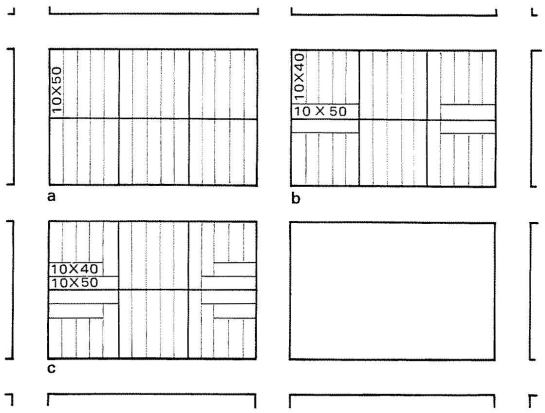
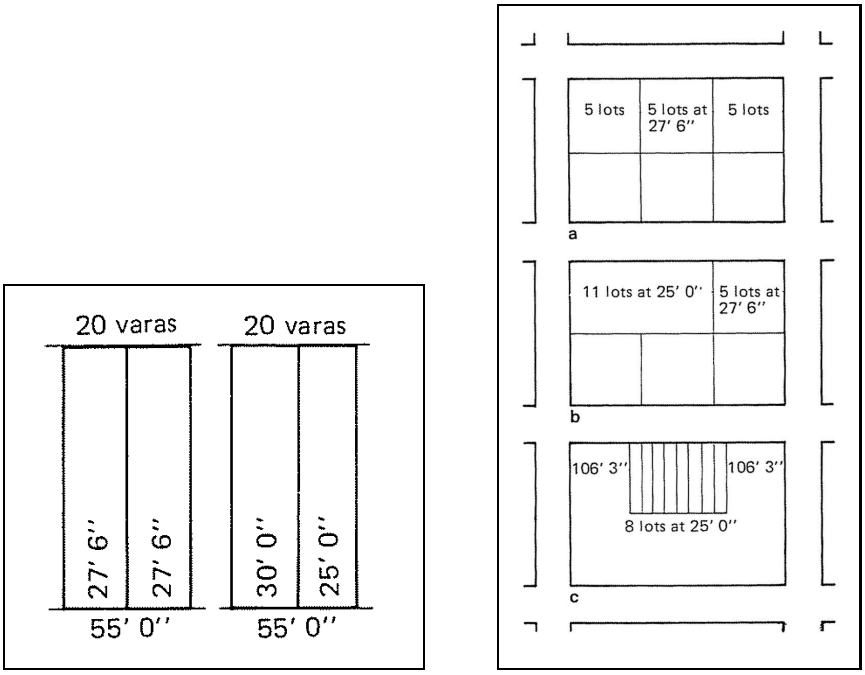


Figure 10: The lot arrangement.

parcels into 5 10-vara lots with a one–to–five proportion. This would create a maximum of 30 lots per block. To increase the total number of lots per block, the corner parcels could decrease their depth to a one–to–four or one–to–three dimension. This would produce arrangements of blocks with a total of 34-38 lots (see Figure 10).

When California was admitted into the United States in 1850 as the 31st state, the measurement system changed to feet and inches. This measurement conversion further increased the permutations of lot arrangements in order to subdivide parcels into maximum number of lots. 10 vara equal 27'-6" and 20 vara equaled 55 feet, which could easily be divided into 25 ft and 30 ft parcels (see Figure 11(a)). In both 1899 and 1931, this measurement translation resulted in "common lot frontage dimensions for the residential sector of Alamo Square were 25'0", 27'6", and 30'0"."When landowners would buy multiple parcels, which was a normal practice, the parcels could then be easily subdivided into 11 lots of 25ft, increasing the total number of lots by one (see Figure 11(b)).

Moudon extracted from her research that it was these small lots that affected the building's form and organization which in essence were the cells that made up the city. A 25' wide lot was an unusual lot dimension. The size was in between the 30' lot size in eastern suburbs where the detached house dominated and the 20' lot in eastern urban



(a) (b)

Figure 11: On the left (a) is the vara lot while on the right (b) is the vera block.

centers where the attached rowhouse was utilized. In this example, Moudon clearly illustrates the dimensional interdependencies of blocks, lots, and building types.

CHAPTER IV

PRIVATE PROPERTY

4.1 Introduction

The process of subdivision, as previously stated creates two domains, the private and the public. These domains interact to help define the other. Therefore the design of the private domain directly effects the public domain and vice versa. In the documentation section of Virginia Highland and Cabbagetown, I analyze how the private sphere of the neighborhoods changed over time specifically paying attention to building typology and how the buildings help to reinforce the public space by the manner in which they are situaed on there respective lots and in turn, the block. Though I break up the components of a neighborhood into three categories, it is important to remember that these components are never separate, autonomous elements. Just as Moudon illustrated the interconnection between lot size and building typology, these three components all build on and relate to each other and it is this relationship that creates the urban form of a neighborhood.

4.2 Buildings

Moudon explained how important it was to "conceive of the house, or unit of building, as a cell of the city organism" and that changing the cell will in turn change the city. What had the biggest impact on the American building industry in the 19th century was the standardization of the balloon frame construction as the primary method of building houses (see Figure 12).

Balloon frame constructions standardization of the building industry did for housing what Gunter's chain did for surveying. It developed a system that was effecient

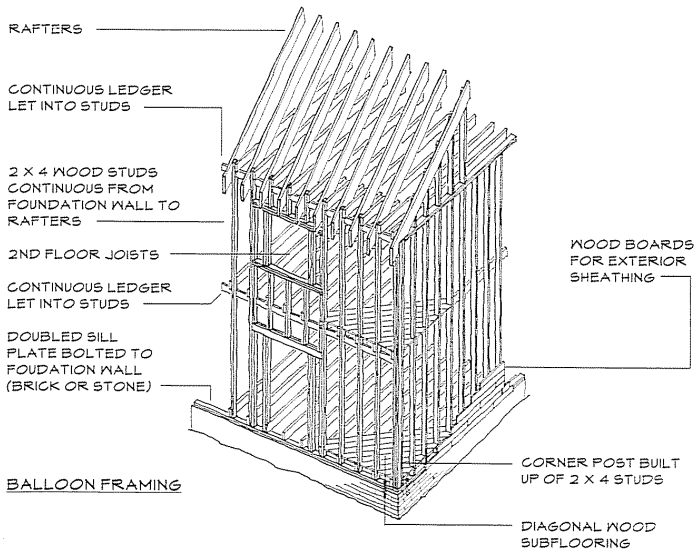


Figure 12: An example of balloon frame construction.

and easy to learn. The system evolved the housing construction into a countrywide industry, which allowed a landowner in California to buy a house from New York City.

Balloon frame construction standardized the building industry using the newly engineered mill lumber, the 2x4, and inexpensive machine-made nails as the primary elements of the building system. These elements allowed for "a new and far more rapid system of building. Stud walls, assembled from thin closely spaced pieces of milled lumber, were nailed together to form a rigid frame. Corner posts were built up from multiple studs, and all parts of a house above the foundation–exterior walls, interior walls, floors, and roof–worked together to give the structure stability and strength."

Before this system was developed, houses were handcrafted using large timbers and hand carved mortise and tenon joints (see Figure 13). This process took time and significant skills to execute. Due to the heaviness of the timbers, the system had an unchanging permanence to the building design and therefore room layouts. Design was kept simple with rectangular shapes due to the complexity in constructing the

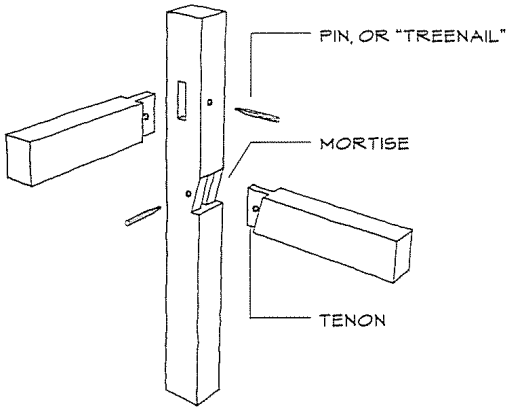
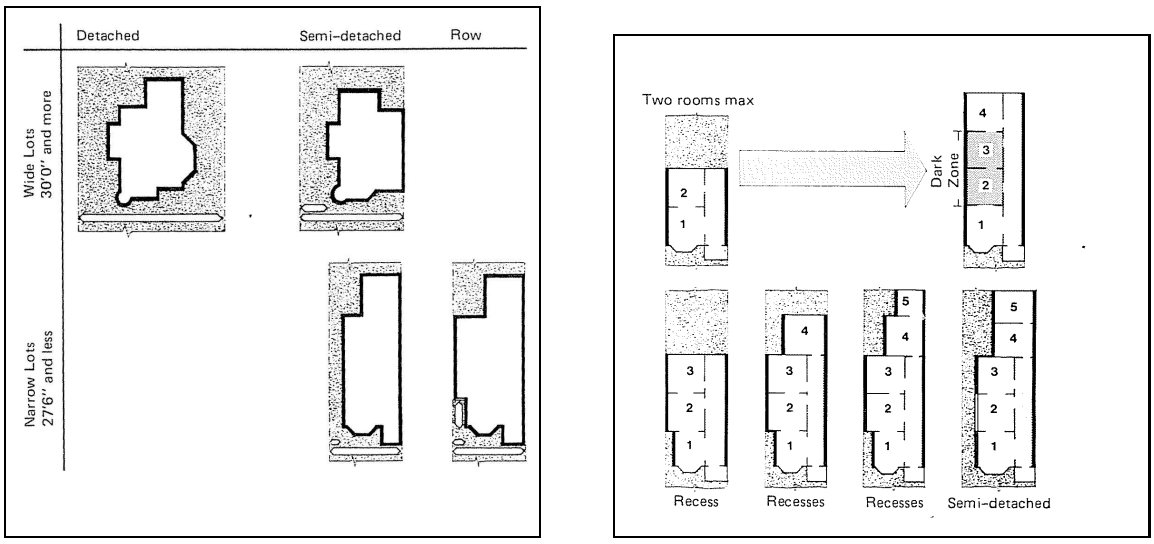


Figure 13: Mortise Tenon joints.

houses.

Balloon frame construction led to a standardized process that permeated the entire United States. Pattern books were developed so that a person on the west coast could pick a popular design used on the east coast. Once they chose the pattern, they could order the wood from their local timber industry and have carpenters construct the house. For non–urban areas, like the Mid–West, where lumber was a scarce commodity, the Sears and Roebuck Catalogue coupled with the intercoastal train system, made it possible for an individual to a buy a house in Kansas City and have it prefabricated and shipped from Chicago.

The system created a standardized housing typology for the United States. As house types changed so did the framework that organized the houses. The lot sizes determined the housing typologies and the housing typologies determined the lot sizes. Moudon illustrated that it was the unusual lot size dimension of 25 feet that had the largest impact on the building types for Alamo heights. The size was in between the 30' lot size in the eastern suburbs, where the detached house dominated, and the 20' lot in eastern urban centers where the attached rowhouse was utilized. San Francisco used a combination of both housing typologies and also developed a



(a) (b)

Figure 14: Both figure (a) and (b) illustrate points made my Moudon in his analysis of San Francisco.

semidetached recessed house that was able to capitalize on the new dimension of the lot (see Figure 14(a)and 14(b)) Limiting the size of the lot limits the type of house and also the orientation of the house in the framework. In the regulated city, lot sizes get larger due changes in typology and drop in land prices with the process of suburbanization.

Christine Hunter in her book Ranches, Rowhouses and Railroad flats, examines how the American house has changed over time [9]. She illustrates that the change of the house typology has an impact on the lot size (see Figure 15). With the dominance of the automobile and the need for garages, the ranch house typology was created with practically the same building construction method used in the 1830's. The insertion of the ranch house into the framework of the city inherently distorts the urban framework by changing the size of the lots. Lot sizes were increased form the 36' lot width for the 1900's bungalow house to a 60' lot size. The lot size allows for the rotation of the house to turn parallel to the street and supports the insertion of the driveway.

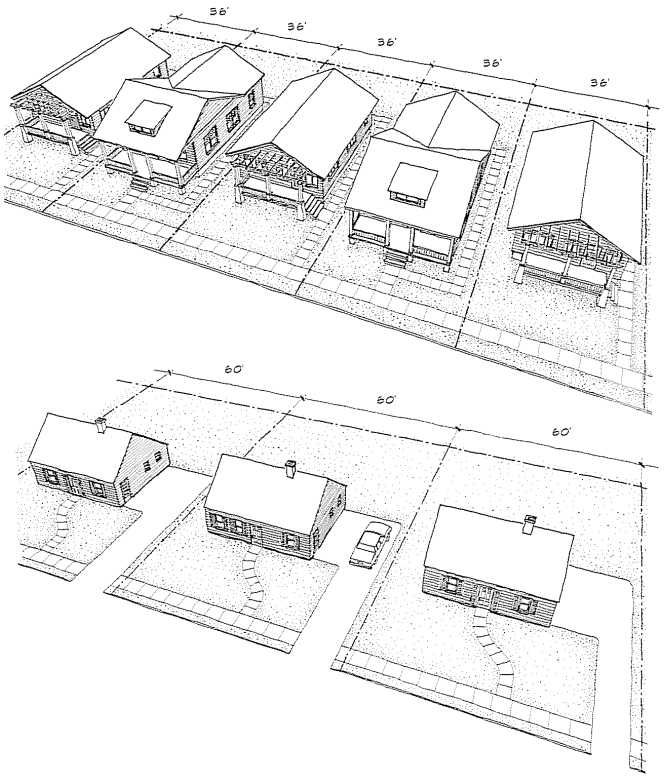


Figure 15: Hunter illustrating the effect of the ranch house on lot size.

4.3 Building Typology

Typology is the means of classifying buildings according to their morphological similarities. This classification enables efficient and effective communication about a buildings characteristics. The most important morphological characteristics are a buildings overall form and massing traditionally derived from the arrangement of the interior rooms. Even though the interior rooms may change over time, as long as the buildings overall envelope remains the same, it will not evolve into a different typological category. The overall form and massing of a building is mainly attributed to its plan and height and does not take into consideration small wings, extensions or additions. Additions are only important if they change the building from one typology into a different typology. Therefore type is a simple formula: type = plan + height. A subtype of a typology is defined by a buildings secondary characteristics such as roof type, door locations, chimneys, and porch type. A building type is not defined

by ornamentation, decoration, building material or construction method. These characteristics define a buildings style, which is often confused with type. Therefore two buildings can be of the same typology but also be of a different style. Because a buildings typology has historical and contextual significance some building typologies are more prevalent in Georgia than in other regions. Some of the more common house typologies found in Georgia include, the Single and Double Pen, Hall-Parlor, Saddlebag, Dogtrot, Georgia Cottage, Gabled Wing Cottage, Shotgun and Double Shotgun, and Bungalow.

"In the most abstract application, building types can be defined without regard to the use of buildings, although generally building types are categorized by function (residential or commercial building types, for example), and almost always a building's historic function can be inferred from its type (for example, a "shotgun" building is a house)." In the Virginia Highland and Cabbagetown neighborhoods, there are distinct typologies that exist in both neighborhoods and some that exist only in one. In the documentation method, these typologies are separated into functional categories: residential (single and multi-family) and commercial. Though, churches exist in both neighborhood, they happen at such low repetitions, that their typology does not largely contribute to the overall form of the neighborhoods.

For single family residential housing typology, there are four categories in which the housing typologies are consolidated (See Figure 16). These categories deal with the building form and the orientation to the street frontage. The first category includes the hall-parlor and the saddlebag typologies. The building form is rectangular with the long end parallel to the public right of way. The second category includes the shotgun, the double shotgun, the tenement housing, and the bungalow typologies. All of these typologies have rectangular form with their narrow end oriented toward the street facade. The their category contains the gabled wing and the english cottage typology. These have L shaped forms with the entry being either on the recessed

portion (as with the gabled wing) or on the extended portion. The final category contains the Pyramid (the four square), the Georgian, or the Queen Ann cottage. These typology have square building forms,with the exception of the some minor projections, and have pyramid roofs. Figure 17 illustrates the four typology classifications for apartment buildings: Courtyard, Corridor, Party Wall, and Hall-Parlor. These Apartment building typologies are only located in the Virginia Highland neighborhood. Figure 18 illustrates the building typologies for both residential (single family) and commercial and illustrates whether these typologies exists in one or both neighborhoods. The previous three figures demonstrate that both neighborhoods have a wide range of building typologies and where one neighborhood lacks in variety in some aspects it gains in others.

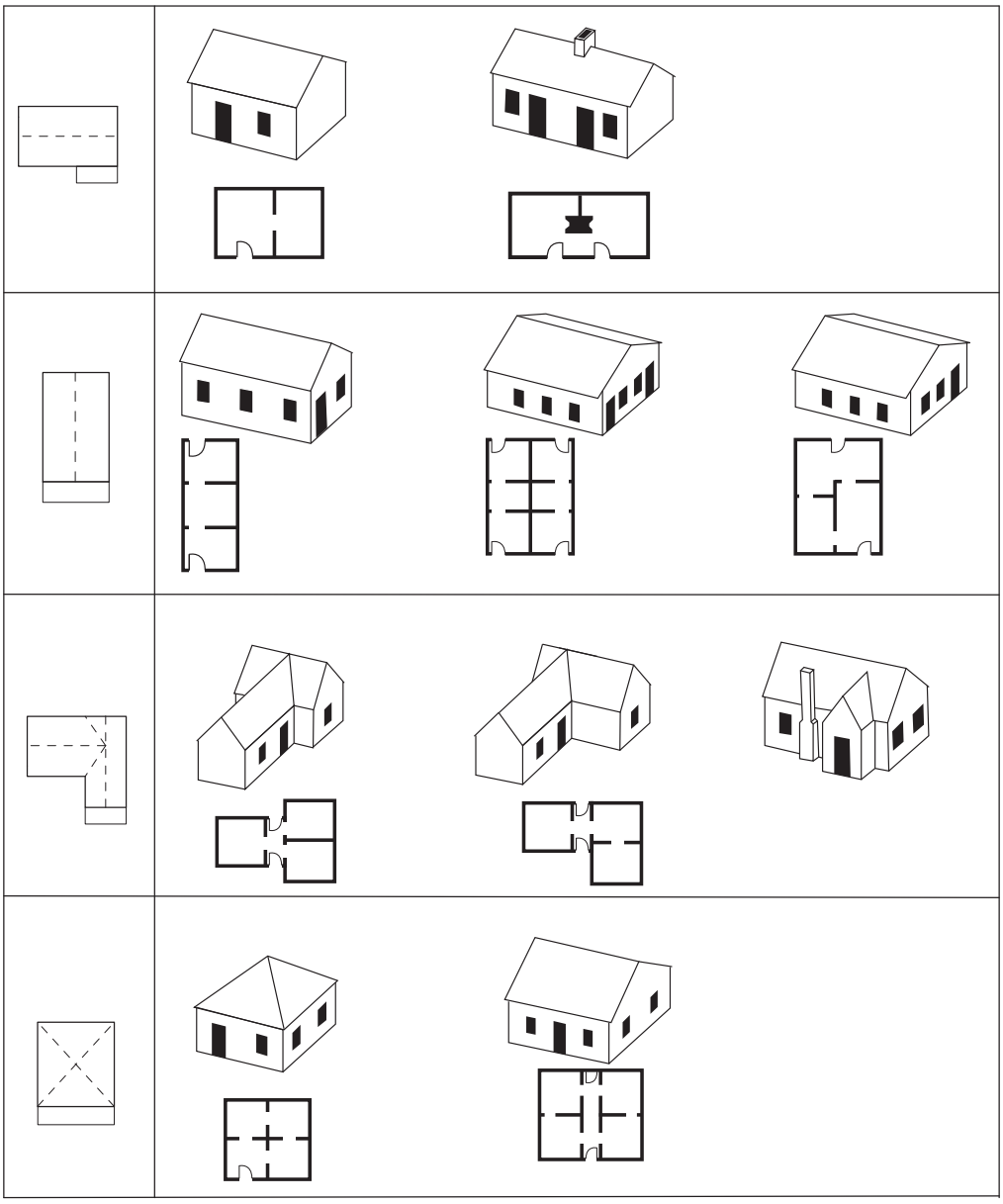


Figure 16: This matrix illustrates the housing typologies that exists in both neighbors and shows how the typologies are distilled into categories for coding purposes.

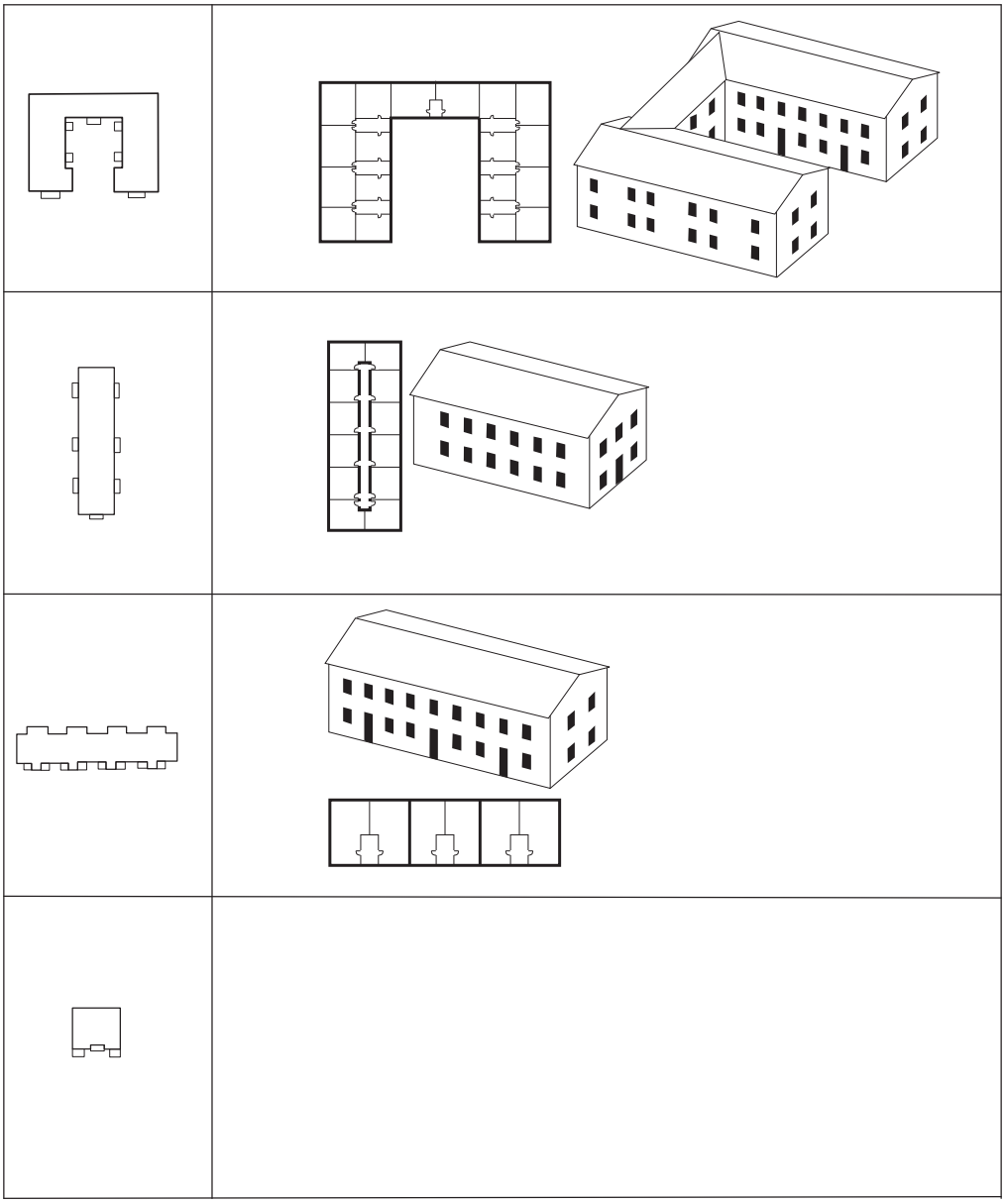


Figure 17: This matrix illustrates the apartment typologies that exists in Virginia Highland and shows how the typologies are distilled into categories for coding purposes.

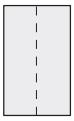
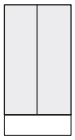
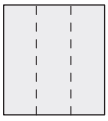
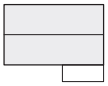
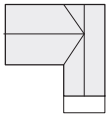
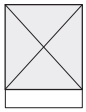
HOUSING TYPOLOGY	VIRGINIA HIGHLAND	CABBAGETOWN	COMMERCIAL TYPOLOGY	VIRGINIA HIGHLAND	CABBAGETOWN
		X		X	X
		X		X	X
	X	X		X	X
	X	X		X	X
	X	X			X
	X	X			

Figure 18: This matrix illustrates the whether the typologies (housing and commercial) exists in Virginia Highland and/or in Cabbagetown.

CHAPTER V

PUBLIC PROPERTY

5.1 Introduction

In the beginning of his article "Legislating Aesthetics" Michael Kwartler draws upon Garrett Hardin's economic term "The Tragedy of the Commons" to depict the inherent problem of the pre–regulated city [14]. The Tragedy of the Commons explains that the individual will inevitably exploit finite resources collectively held in a commons by continuing to maximize their utility from the resources. As long as the individual sees the negative impact of his actions collectively, not individually, shared by the community, he will continue this practice until the resources are exhausted.

Hardin illustrates this problem using a hypothetical scenario of a pasture collectively shared by a group of herdsmen. When deciding whether to add another cattle to his herd, the herdsman weighs the decision as positive and negative utility. The positive utility is the gain of the capital from having another head of cattle, whereas the negative is the increased degradation of the pasture by the additional head of cattle. Since the community at large collectively shares the negative utility, then the herdsman sees the positive, which only he gains from, outweighing the negative. He, as well as every other herdsman, continue to add cattle using this logic and eventually deplete the commons pasture.

The American industrial pre-regulated city illustrates an example of a tragedy of the commons. Landowners exploited their property to maximize their utility without regard to the negative effect of the community. As long as this process was not managed, then the individual would continue to exploit and maximize his utility. In the turn of the century American industrial cities experienced unprecedented population

growth. The growth increased demand in property which exponentially raised property value. The individual landowner, with the help of the gridiron plan which made development easy and efficient, sought to maximize his capital by over developing his land without regard to the negative impact of the community.

Hardin's "The Tragedy of the Commons" sets the stage for the need for American land regulations in order to protect the health, safety and welfare of the community. In 1916 New York City passed the first comprehensive zoning ordinance and became the model for subsequent Euclidean zoning. Zoning was quickly adopted and widely dispersed across the country. However the wide spread adoption of Euclidean zoning did not perfectly mirror the precedent set by New York City's 1916 Zoning Ordinance. Euclidean zoning successfully distributed the structure of the New York City's Zoning Ordinance but failed to implement the actual substance which made the ordinance so successful (discussed below). In addition, the enthusiasm for zoning overlooked the fact that New York City's territory was subdivided first according to the 1812 Master Plan (Figure 19) before the implementation of zoning. This lack of foresight was exacerbated by the establishment of the Standard State Zoning Enabling Act of 1924 prior to the Standard City Planning Enabling Act of 1928. This subsequently emphasized zoning over subdivision and unfortunately shifted the purpose of zoning from being a short term regulation to a semi–permanent devise that stifled the growth of the modern American city.

5.2 Zoning

5.2.1 New York City's 1916 Zoning Ordinance

New York City's 1916 Zoning Ordinance was the first comprehensive zoning ordinance in the country. The community supported the establishment of land regulations on their property and fully supported the passage of the ordinance. The ordinance regulated three aspects of development: land use, height, and ground coverage; and also

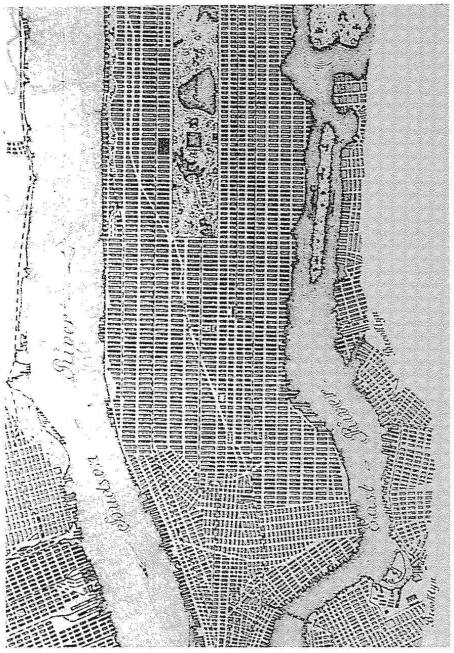


Figure 19: Commissioners' grid in lower Manhattan.

implemented a building envelope regulation. Each regulated element governed various districts. There were three land use districts: residential, business, and unrestricted (e.g. industrial and other undesirable uses). "Residential districts permitted houses, apartments, hotels, clubs , schools, churches and other cultural and institutional uses. Small scale businesses, such as doctor's offices, dressmakers, and artists' studios, also were allowed." [23] There were five height districts in which the height of the building's street wall was determined by a prescribed ratio to the street width. For example if the height district was 2 and the street width was 60 feet, then a building's street wall could not exceed 120 feet (See Figure 20). There were five ground coverage districts which regulated the lot coverage of a building, and the dimensions of side yards, back yards and courtyards. These requirements were tailored around building typologies. The building envelopes were developed for the regulation of skyscrapers in order to keep them from producing dark streets. The envelope regulation used a facade step-back approach to regulate the mass of the buildings in order to maintain daylight on the street. The enveloped was derived from the building street wall height

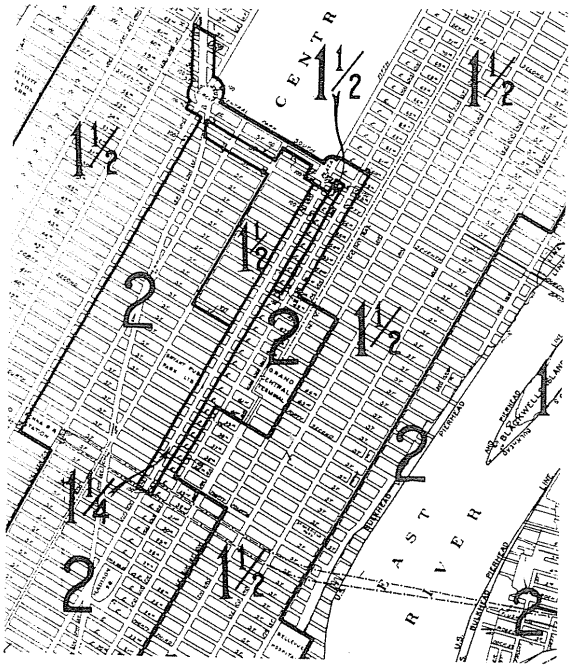


Figure 20: 1916 NYC height districts.

and a street's sun exposure angel. This was determined by drawing a line from the center of the street and intersecting it with the street wall height, as illustrated in Figure 21. When developers wanted to maximize their building's mass allowed by the zoning envelope, the building would take the shape of the "wedding cake" design which became a prevalent design style for New York City's skyscraper after 1916.

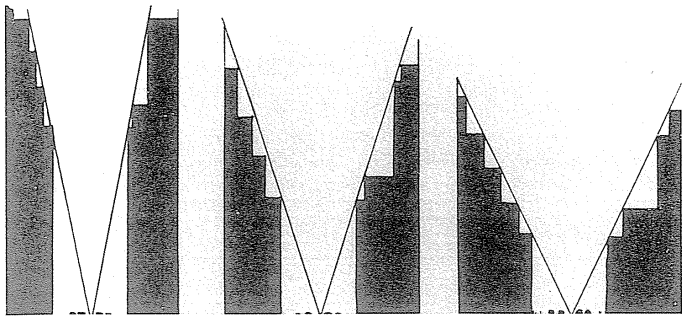


Figure 21: The setback line established in the 1916 zoning resolution helped control the maximum mass of buildings.

5.2.2 Euclidean Zoning

New York City's 1916 Zoning Ordinance's popularity made it the precedent from which other cities developed their zoning. Across the United States in the early 1920's zoning was rapidly adopted because of its effectiveness in regulating private property and because governments did not have to pay for the implementation of zoning as it was protected by the police powers in the constitution. By 1921 48 municipalities comprised of eleven million people had adopted zoning. Just two years later, in 1923, the number of municipalities zoning their cities had increased to 218 effectively doubling the number of individuals inhabiting a regulated city (22 million individuals) [15]. This type of Zoning became known as Euclidean Zoning. The name is derived from the 1926 U.S. Supreme Court Case: The Village of Euclid v Amber Realty Company. This was the first U.S Supreme Court case that dealt with comprehensive zoning since its development in New York City. The Supreme Court ruled in favor of the village of Euclid upholding the city's zoning regulation. This seminal event was the seal of approval on zoning and gave it the legal strength needed to support the notion of zoning in a United States court of law.

One of the reasons why this case was able to stand up in the court of law was due to Herbert Hoover's Standard State Enabling Act [7]. Hoover was the head of the Department of Commerce and believed in the ability of zoning to be able to maintain property values and encourage investment in local markets. He created the SCZA as a model for other municipalities to ease their adoption of zoning. "The Standard Enabling Act encouraged many states to adopt their own enabling acts. These acts which specifically authorized local zoning laws, encouraged many more municipalities to enact zoning laws because it reassured them that their new laws would be able to withstand court challenge [15]."

5.3 Structure vs. Substance

Though the 1916 zoning ordinance was the precedence for Euclidian zoning, the typical implementation of Euclidian zoning did not have the same impact on the municipality as the impact of the 1916 zoning ordinance on New York City. Michael Kwartler argues that Euclidian zoning took its structure from the 1916 New York City Zoning Ordinance but that it did not take its substance [14]. The structure of Euclidian zoning, like that of its predecessor, the 1916 New York City Zoning Ordinance, employed maps with accompanying texts to dictate use, height, and area districts. The prescriptive structure of Euclidian zoning made it easy to be administered by leaving little room for interpretation. However, the way in which the districts were actually regulated, i.e. the substance of zoning, was implemented in drastically different ways.

Kwartler compares the 1961 and the 1916 New York City Zoning Ordinances in making his "structure vs substance" argument. The 1961 zoning ordinance was created with the same euclidian structure as the 1916 ordinance. However, the manner in which the latter ordinance was utilized drastically differentiates the two codes. The 1961 zoning ordinance rigidly regulated building heights and setbacks in an attempt to legislate a specific building typology (the Seagram building). The 1916 zoning ordinance on the other hand, loosely defined the zoning envelope and allowed for variation of building typology while focusing on the design of the street. "The effect of the 1916 ordinance was to subordinate each building to that of the ensemble of buildings lining and defining the public space of the street–the streetscape." [14] Using the zoning envelope to design the public space of the street, is the most important distinguisher between the 1916 zoning ordinance and general Euclidean zoning.

CHAPTER VI

CODING OF THE BUILT ENVIRONMENT

6.1 The neighborhoods of study

I chose Virginia Highland, a typical suburban trolly neighborhood and Cabbagetown, a mill village, as the subjects for the coding project (see Figure 22). Both neighborhoods can be considered "good" and were primarily established before the onset of modern land regulations. Both areas are well liked neighborhoods in the City of Atlanta, and are listed on the National Register of Historic Places. They are neighborhoods built for the working class which represents the majority of American housing. Though they have many similarities, they are also very different. These differences introduce variation and complexity amongst the neighborhoods and are explored in detailed.

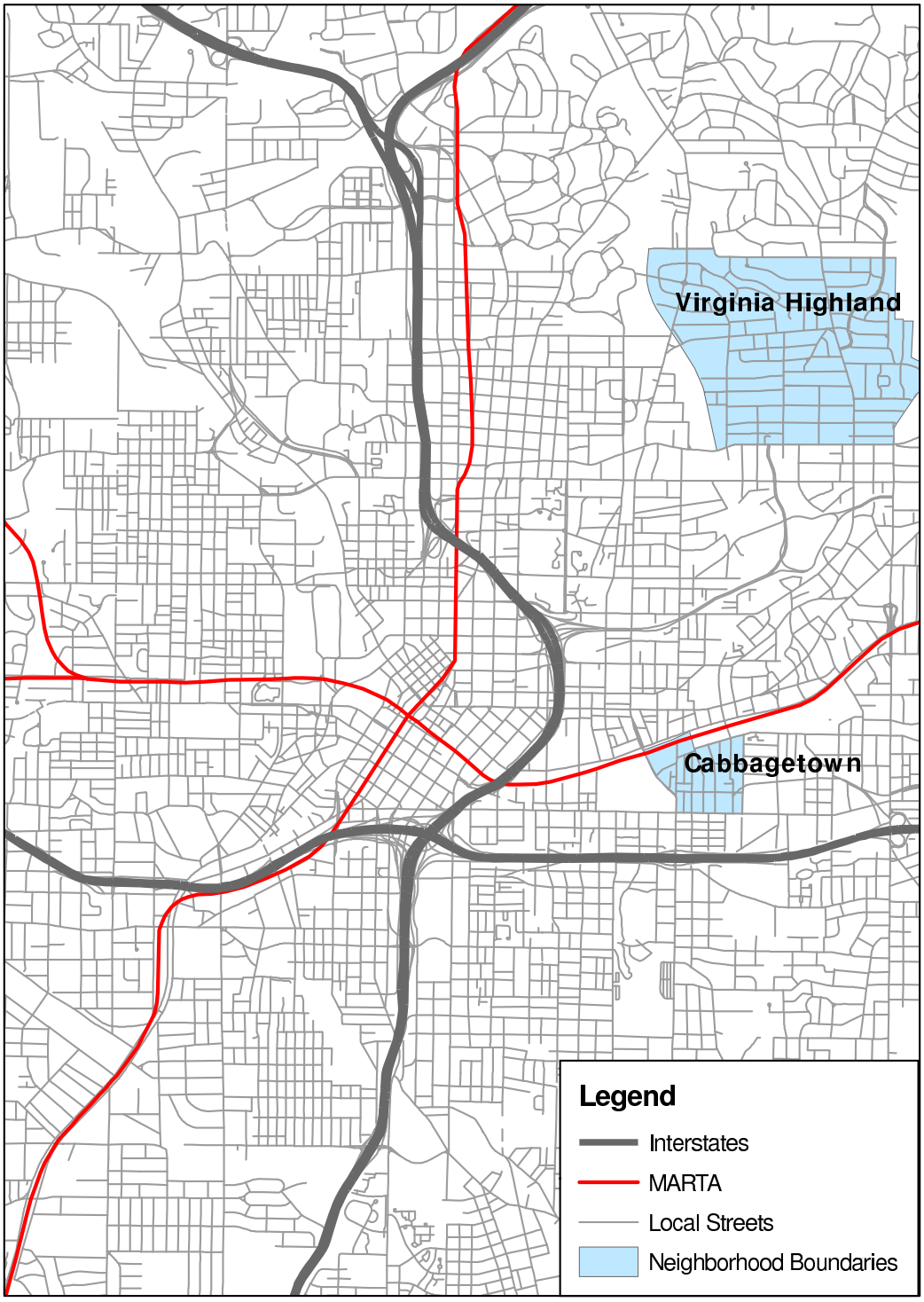


Figure 22: Neighborhood Site Map

6.2 Virginia Highland

6.2.1 Identifying the Site

The coding site for Virginia Highland does not follow the city's established neighborhood boundary(see Figure 23). The site is bounded by Virginia Avenue to the north, North Highland Avenue to the east, Ponce de Leon Avenue to the south, and Ponce de Leon Place to the west. I have chosen this area for the site because it is the oldest contiguous portion of the neighborhood and the smaller size is more comparable to the site area for Cabbagetown. Figure 24 labels the site for future reference. The blocks are arbitrarily numbered and have no relationship to any other pre–established numbering system (such as the block numbering system of the City of Atlanta).

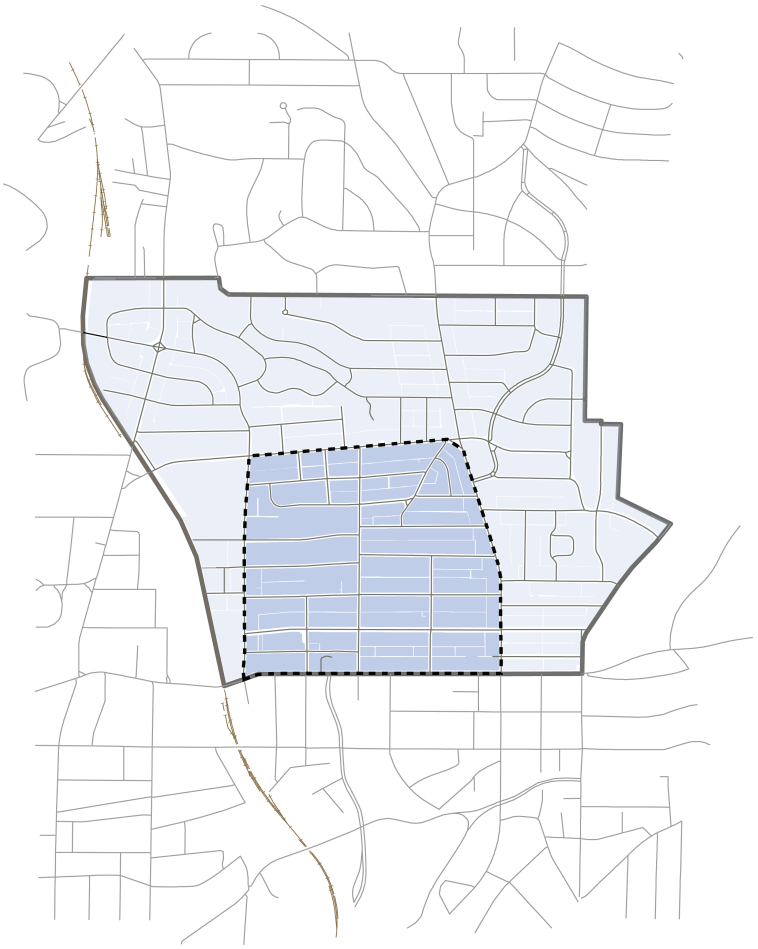


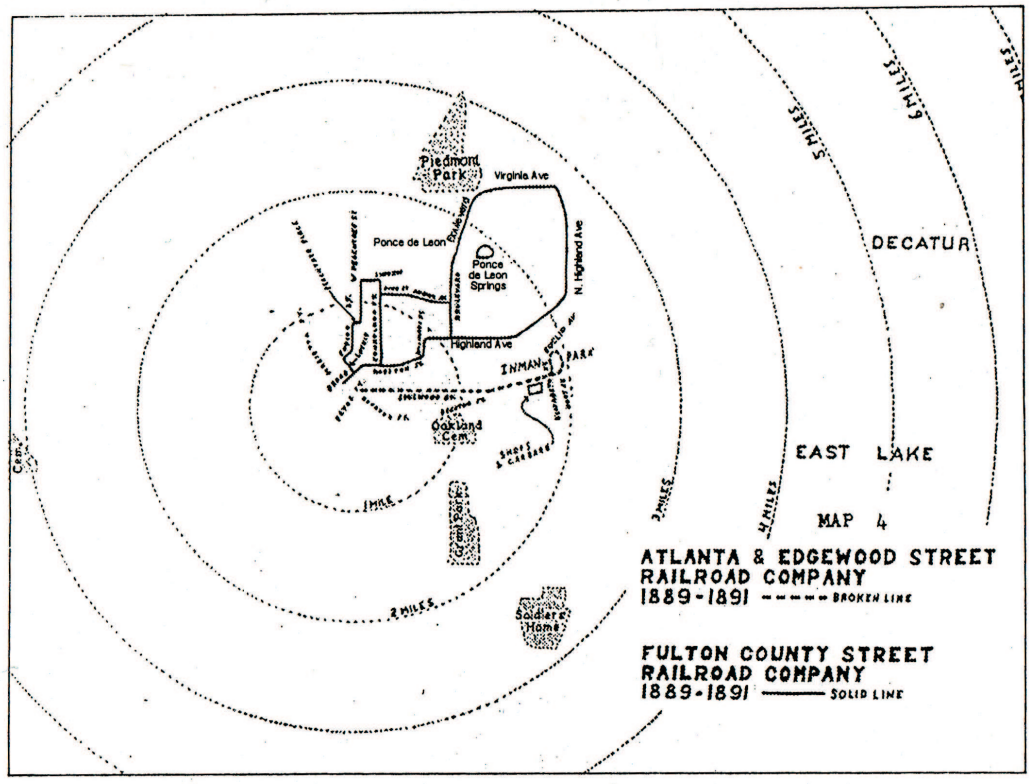
Figure 23: Virginia Highland Site Boundary

Figure 24: Virginia Highland site map with numbered blocks and street names.

6.2.2 Situating the Site

6.2.2.1 The defining elements–historical

Virginia Highland was developed as a trolley suburb of Atlanta, Georgia since the neighborhood was located three miles from Atlanta's downtown and commercial district. The introduction of mass transportation in the form of the trolley enabled the development of outlying neighborhoods by allowing residents to commute longer distances to work which before would have been considered infeasible. The trolley opened in 1890 when Richard Peters and George Adair purchased the Atlanta Street Railway Company. The Nine Mile Trolley was their first project. The trolley circled the study site. It ran north on Boulevard/Monroe, east on Virginia and South on North Highland (See Figure 25). The neighborhood is named for the intersection of Virginia Avenue and North Highland Avenue.



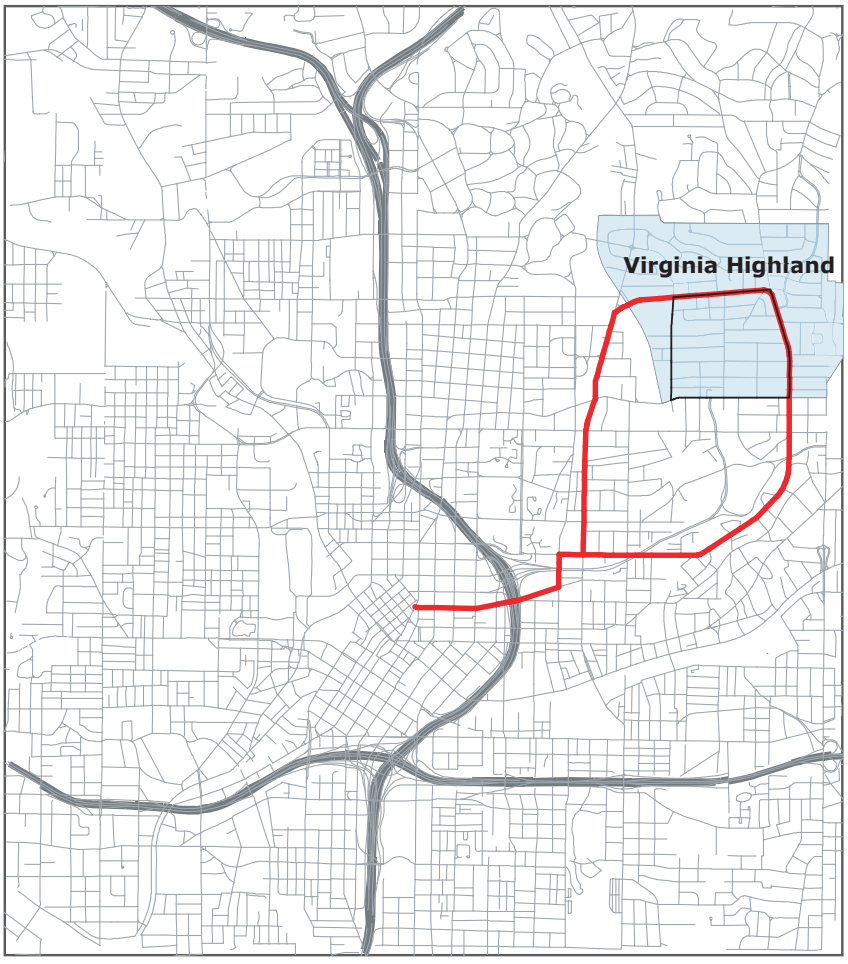


Figure 25: The Nine Mile Trolley connecting Virginia Highland to Atlanta

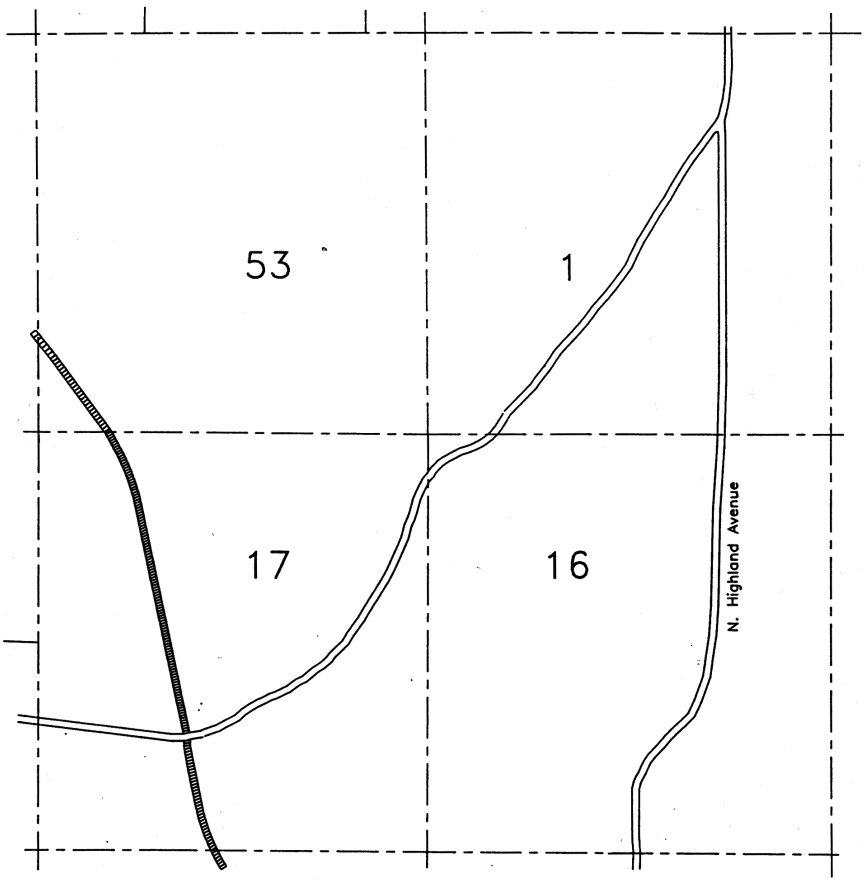


Figure 26: 1872 Map

The importance of this intersection can be attributed to the trolley line. The shape of this intersection was curved to accommodate the trolly, and though there is no longer a trolley this curve creates a defining characteristic for the site. The presence of the trolley impacted the hierarchy of the streets and this was especially the case for North Highland Avenue.

Before the 1890's, Virginia Highland was primarily farmland and woods. As seen in Figure26A, North Highland Avenue and Todd Road make up the primary transportation network for the neighborhood at this point in time.

Though the alignments of the two streets change from their original position, their historical presence leave a lasting effect on the neighborhood. Todd Road is truncated around 1911 but it's diagonal shape influences the subdivision pattern of

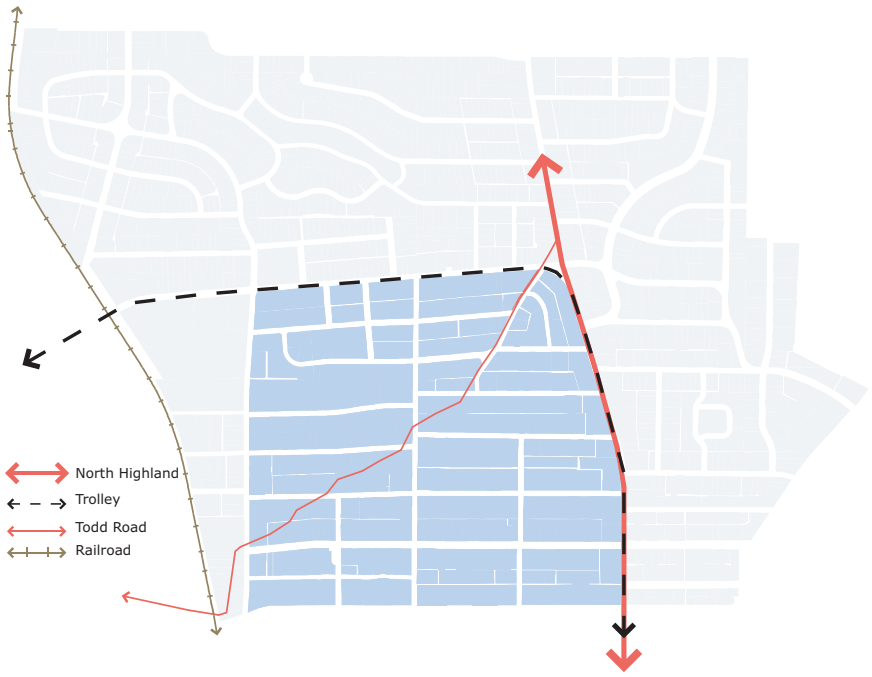


Figure 27: Historical Defining Elements

blocks 4,5,8,9,11 and 12. North Highland Avenue shifts it alignment to its current position by 1893 and continues to functions as the neighborhood's main thoroughfare with increased importance due to the introduction of the trolley line. The Atlanta and Charlotte Air-line Railroad tracks on the west side of the neighborhood began construction in 1868 which led to early industrial and commercial expansion into this area . The railroad tracks created a boundary for the neighborhood by segmenting potential street connections to west side. Figure 27 illustrates these defining elements with the current Virginia Highland site.

6.2.2.2 The evolution of subdivision

Virginia Highland was not designed and subdivided at one time as seen with planned neighborhoods such as Atlanta's Ansley Park but instead Virginia Highland was subdivided in a piecemeal manner over an extended length of time. In 1893, according to the Atlas of Atlanta by Latham and Baylor, the site was owned by three private landowners, W.A.Hemphill, Mrs. B.F. Walker, and G.B. Adair(owner of the Nine

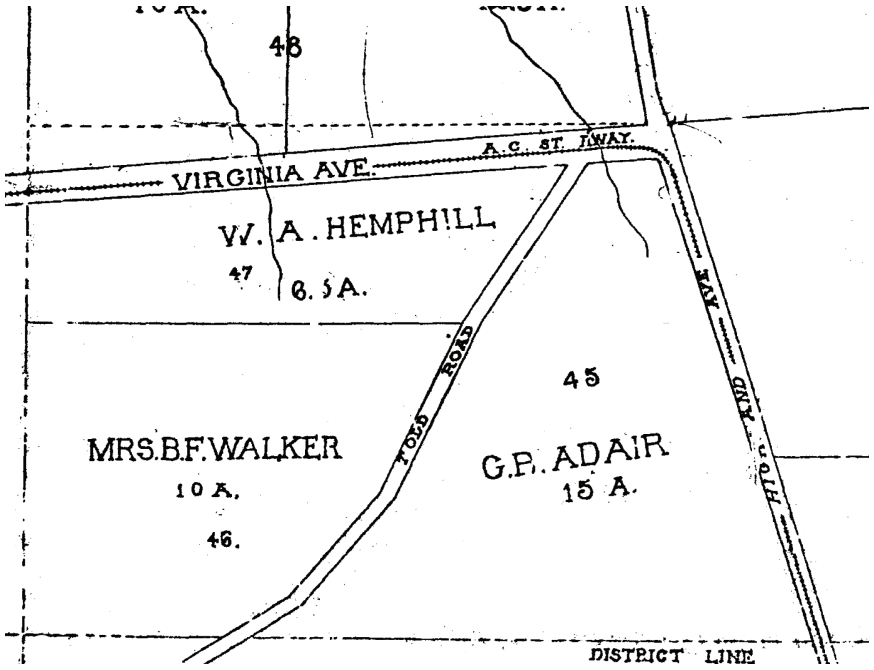
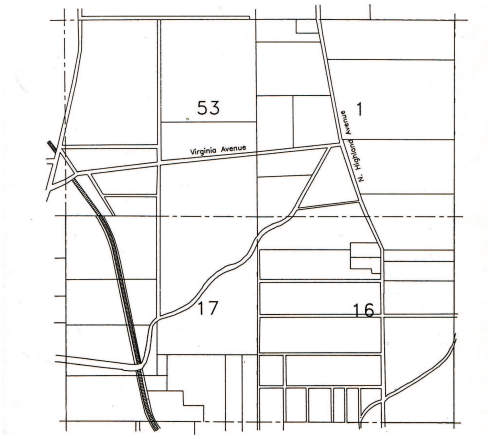


Figure 28: 1896 Baylor Map.

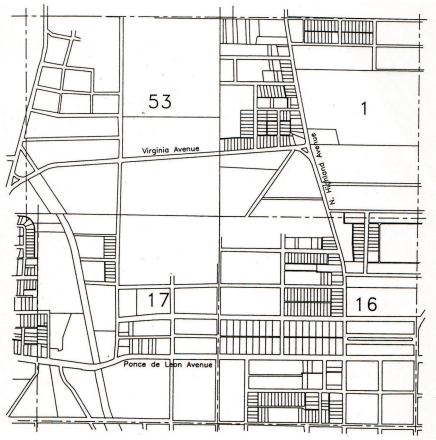
Mile Trolley) (See Figure 28. With the introduction of the trolley and consequently an increase in demand, the land was subdivided into smaller parcels for ease of purchase. Figure 29 illustrates how the site was subdivided from 1893 to 1917. Adair who owned the eastern portion of the site from Todd Road to North Highland Avenue initiated the subdivision process as seen in the 1893 Subdivision Map, by laying out east/west streets perpendicular to N.Highland Avenue. At this point in time, the development of the Nine Mile Trolley had not yet reached Virginia Highland neighborhood, but Adair capitalized on the adjacency of his land with the potential trolley line and set the framework for an east/west oriented gridiron street system. The !893 Subdivision map in Figure 29 illustrates this street framework which extends from Adair's parcel to Walker's parcel to the west.

Figure 30 illustrates the evolution of the subdivision in Virginia Highland from 1903 to 1925 and further emphasizes the piecemeal nature of the subdivision of the site. By 1932, as seen in Figure 31, the entire site is subdivided, and developed transitioning the site from the private ownership of three individuals to that of hundreds.

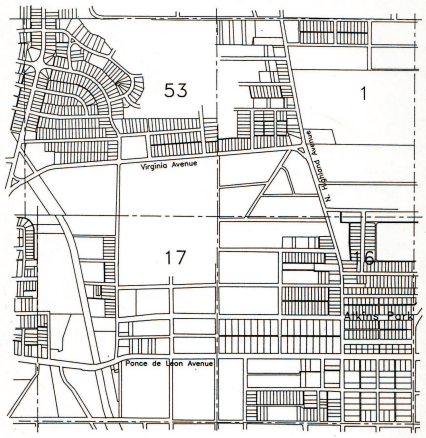
This figure juxtaposes the neighborhood's subdivision map with its figure ground. The figure ground illustrates how the building placements reinforces the urban structure of the neighborhood by delineating the street and block pattern of the subdivision map. This strong delineation due to the continual building placement to the right of way defines the public space of the neighborhood.



A. 1893 Subdivision Map



B. 1911 Subdivision Map



C. 1917 Subdivision Map

Figure 29: Virginia Highland subdivision from 1893 to 1917.

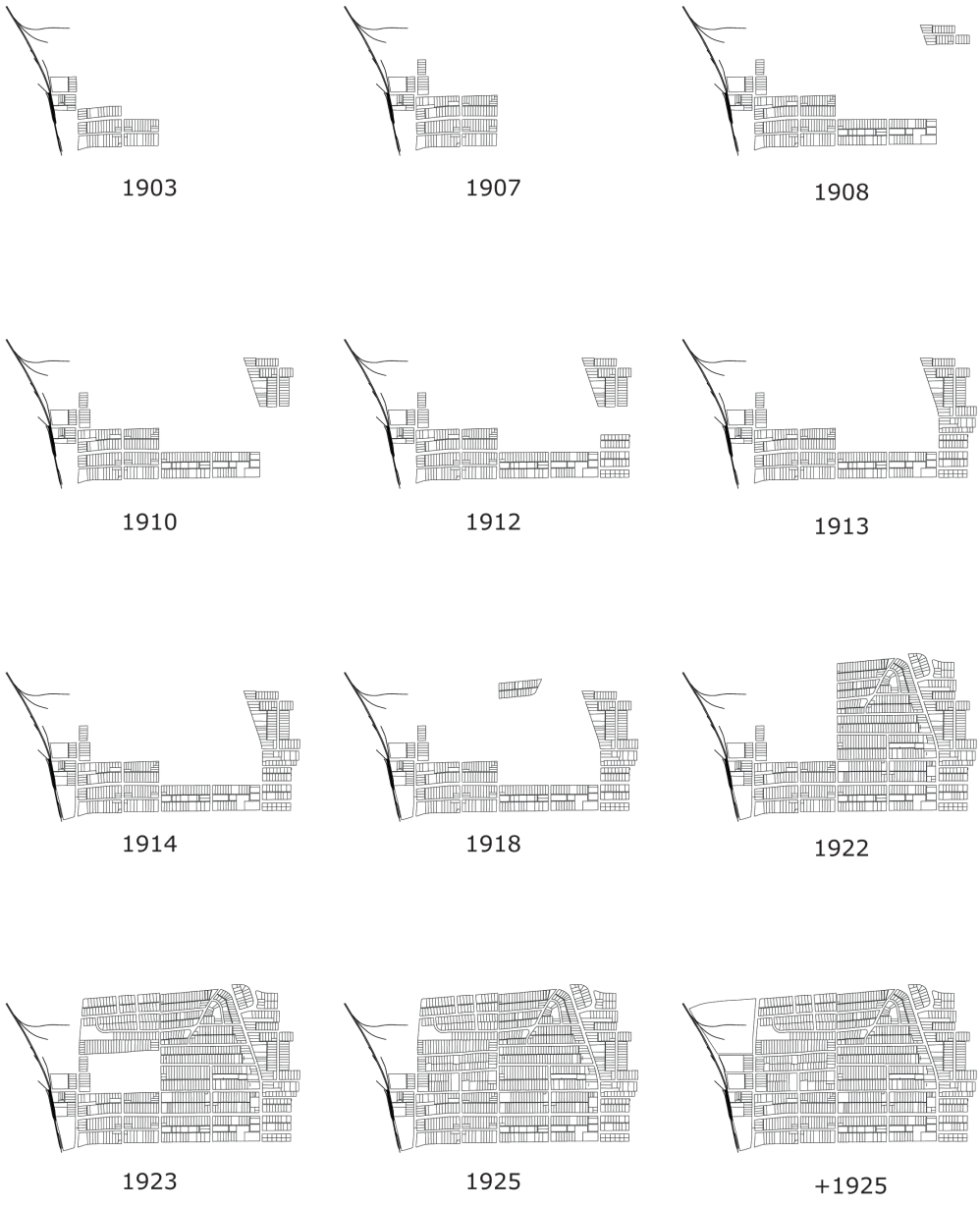


Figure 30: Subdivision evolution from 1903 to 1925.

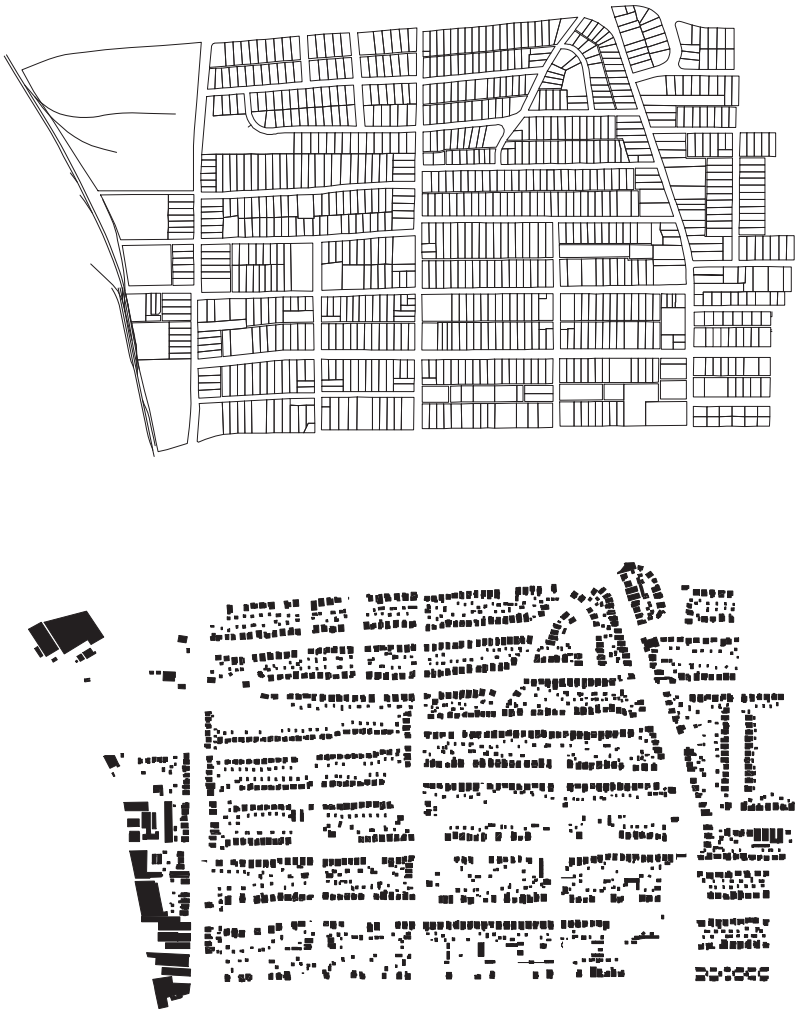


Figure 31: Above (a) 1932 parcel map; Below (b) 1932 figure ground.

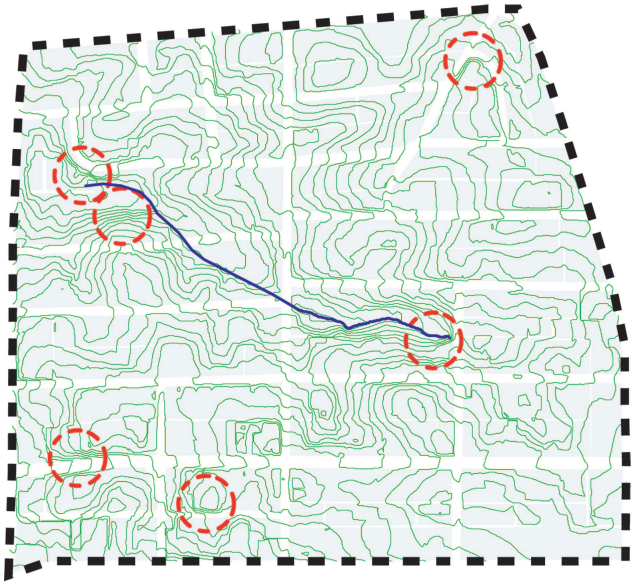


Figure 32: The natural elements of topography and stream beds

6.2.2.3 The defining elements–natural

Figure 32 illustrates the natural defining elements of topography and stream beds. The red circles highlight large topographical changes. The most obvious impact of topography on the subdivision of territory can be seen in the irregular shape of block 10 (red circle on the top left). Adair Avenue does not intersect with Ponce de Leon Place and instead intersects with Virginia Circle in order to avoid the steep grade change indicated.

The location of the stream bed also impacts block shape as seen in block 17. Block 17 is wider than the average block dimension due to the necessity of having the stream bed run through the center of the block. As seen in Figure 31 the block is unevenly subdivided with smaller lots on the south side of the block enabling the stream bed to transect the back of the northern lots instead of running through the alley. The irregular width of block 17 results in the offset of Drewy Street at the intersection of Barnett Street.

6.2.3 Typologies

6.2.3.1 Streets

The neighborhood components are divided into three typology sets: streets, blocks, and buildings. There are four street typologies found within the site: thoroughfare, connector, through street, and local street (See Figure 33). Since the majority of the streets have the same street width of 50 feet, the street typology is not determined by the right of way width but instead is determined by function. The streets not only have relatively the same width, but the street components such as sidewalks and on-street parking are also quite congruent throughout the different typologies. North Highland Avenue represents the first typology of the street hierarchy, thoroughfare. The thoroughfare not only connects the neighborhood with the city, as seen with the connector typology, but it also focuses the transportation and commercial activity within the neighborhood. The location of the trolley helped to emphasize this characteristic of North Highland Avenue and establish it as a thoroughfare.

The street section of North Highland Avenue in Figure 34 illustrates the general composition of the street. The street has on-street parking on both sides of the right of way and a combination of housing and storefront. The storefront clearly defines the public space by having little to no setback from the right of way. The housing setback varies from 20'to 70'. Ponce de Leon Place represents the connector street because it functions by connecting the study site to the north. Ponce de Leon Place has on-street parking on one side of the street as seen in Figure 35, and has a combination of commercial, apartment and housing typology. The apartment setbacks vary regardless of topography change. Barnett Street represents a through street as seen in Figure 36. It is the only street that traverses the site's interior perpendicular to the orientation of the street grid. Barnett street is historically important since it correlates with the lot boundary between lot 17 and 16. Every other street in the site represents a local street. Figure 37illustrates the steep topography

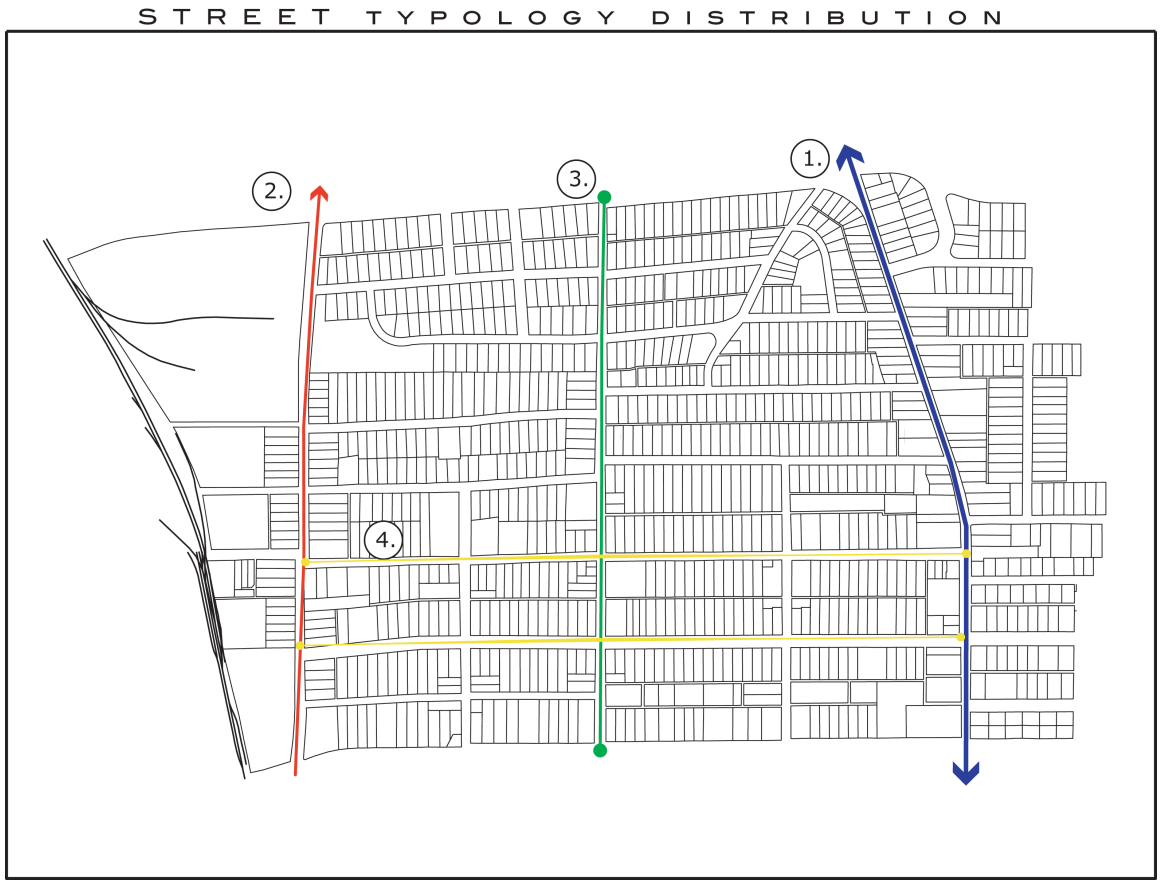


Figure 33: Street map.

change at Adair Avenue discussed in the natural element section. As discussed, the street curves at this point in order to avoid this drastic change in elevation. Elevation change not only effected street allignment but it also effected housing setback. Figure 37 illustrates how the housing setback are often affected by topography. When a house is situated on an increasing grade it will have a larger setback than a house situated on a decreasing grade. This pattern helps to reinforce the public space. The house on the increasing grade can sit further back because the topography change defines the street where as a house on a decreasing grade has to sit closer in order to accomplish this task.

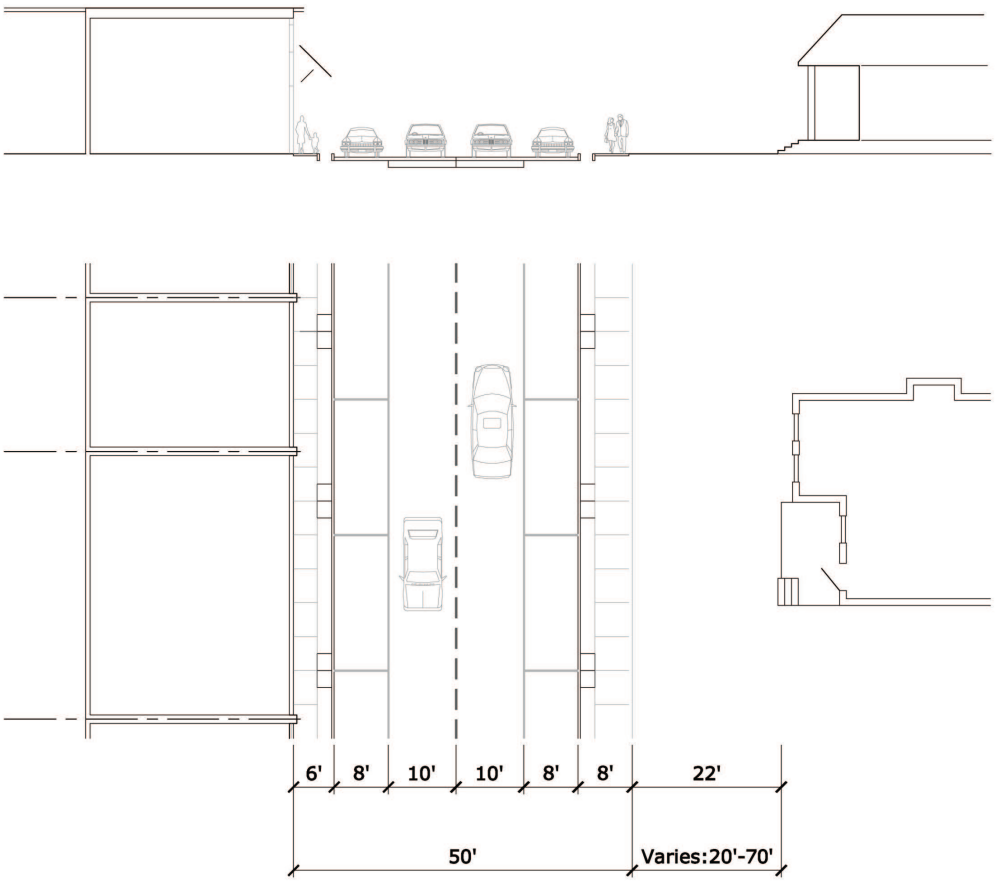


Figure 34: Thoroughfare typology.

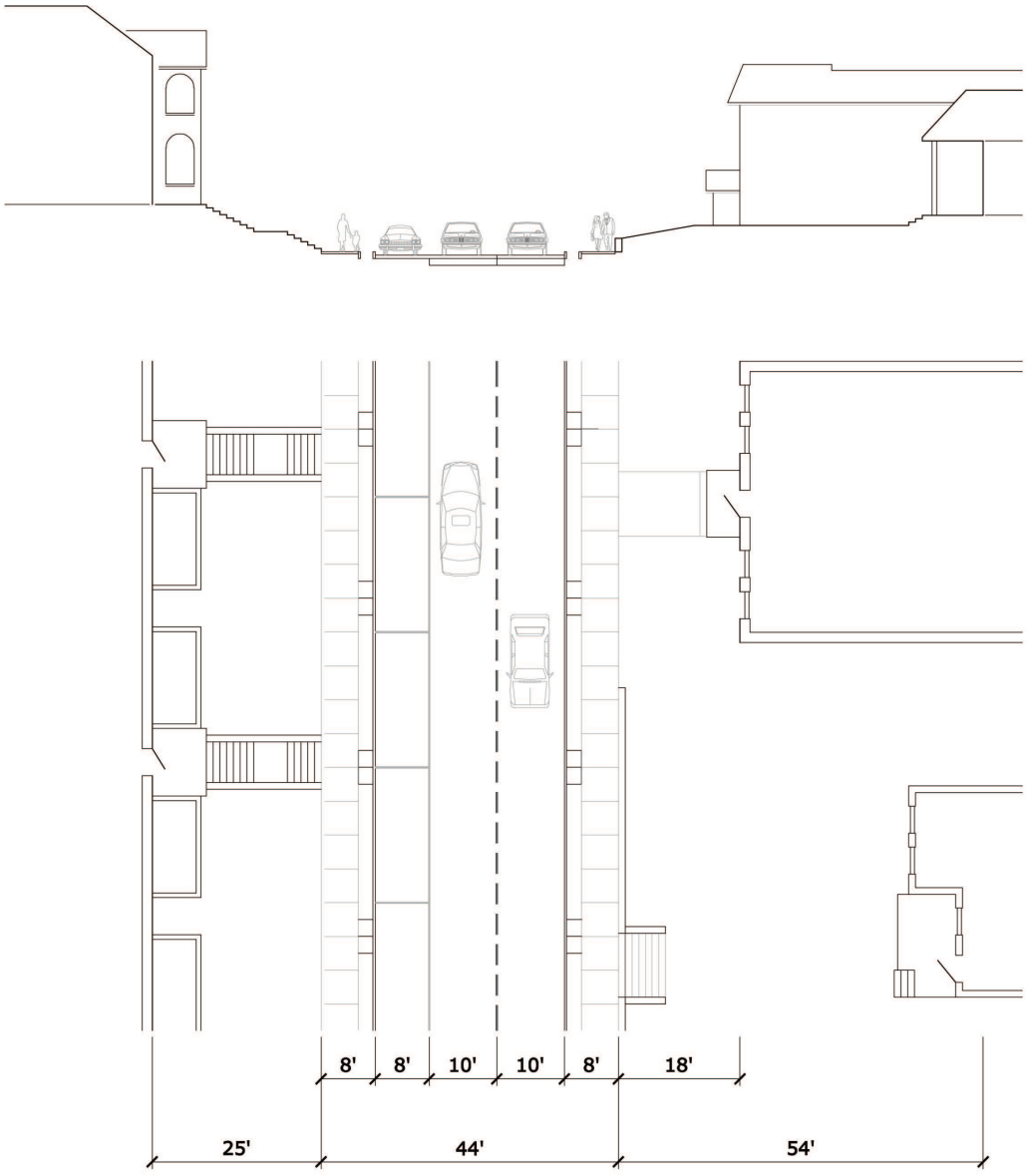


Figure 35: Connector street typology.

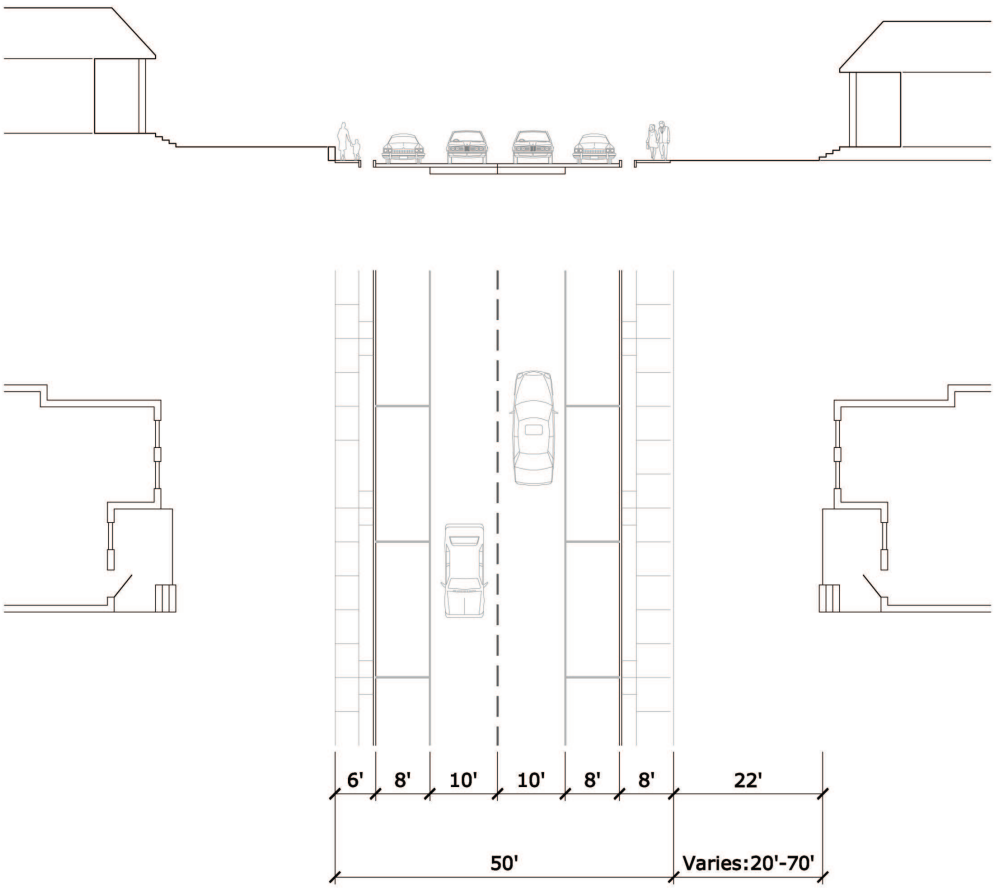


Figure 36: Through street typology.

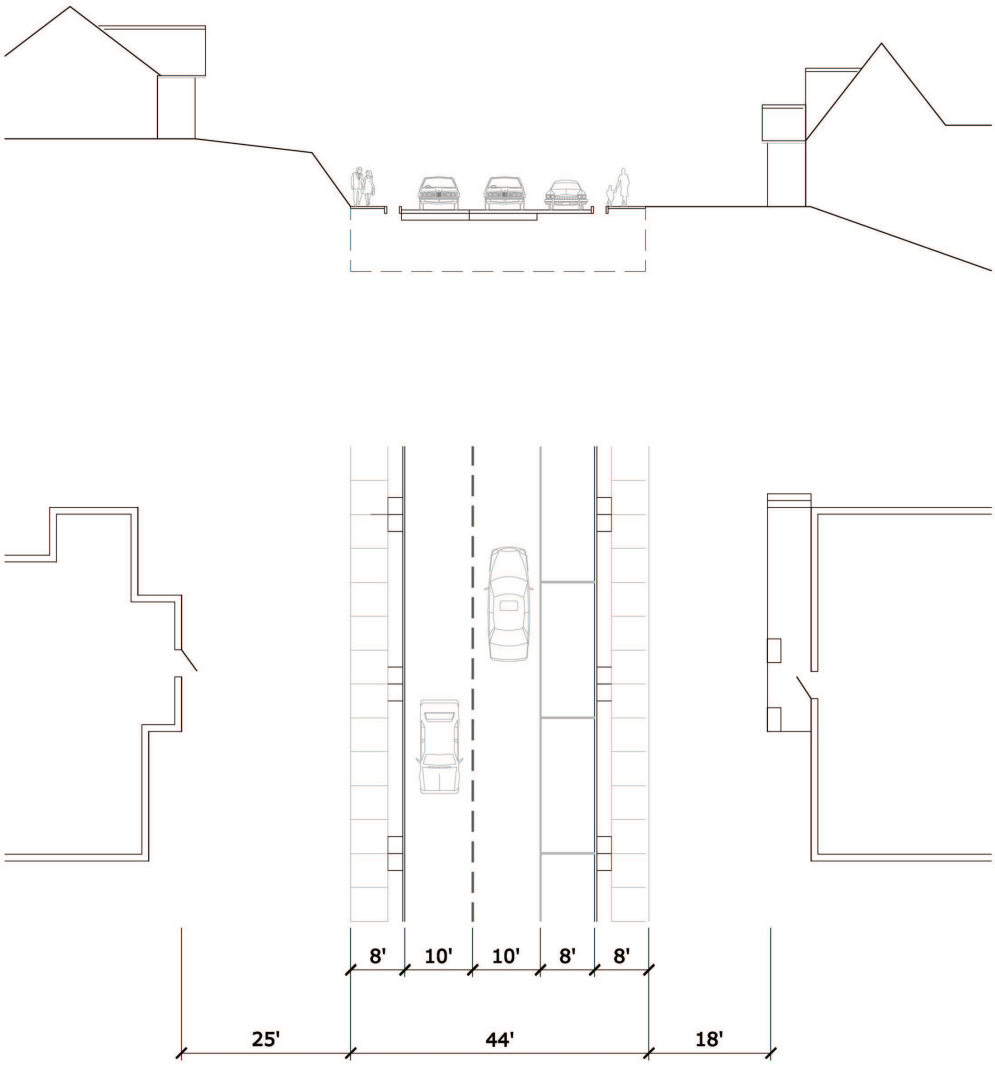


Figure 37: Local street typology.

6.2.3.2 Blocks

Blocks are the second of the neighborhood's three typology sets. The blocks are defined by the arrangement of the lots within the block and may better be classified as block+lot typology. The block+lot typology is the most important component that defines the outcome of the site's built environment through the orientation and dimension of the lots within each block. This typology influences how both the public and private spaces will be defined. The average street length per lot is 45.6 feet, this dimension coupled with the lots' orientation correspond to the array of building typologies found in the site. There are four different block typologies: 2-sided, 3-sided, 4 sided and extra wide (see Figure 38).

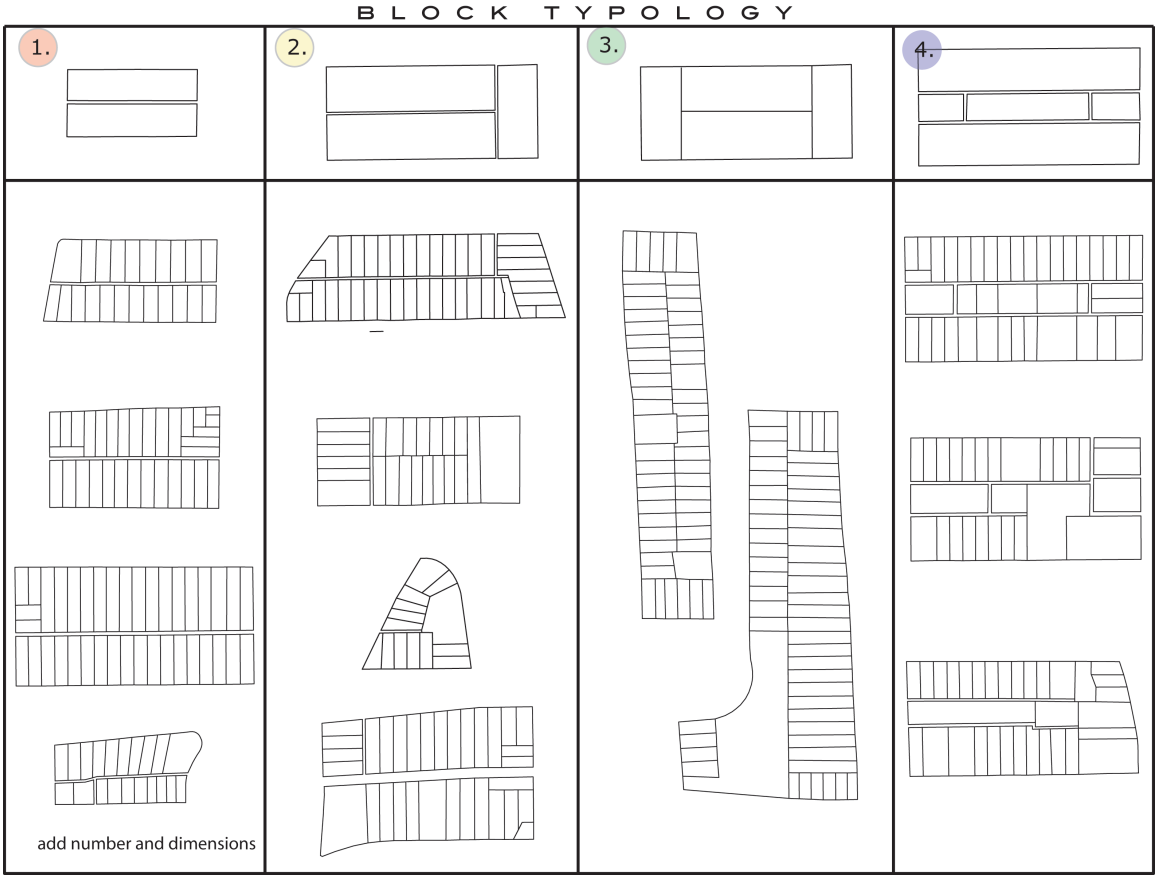


Figure 38: Block Typology

The extra wide block diverges from orientation of the lots and deals with the

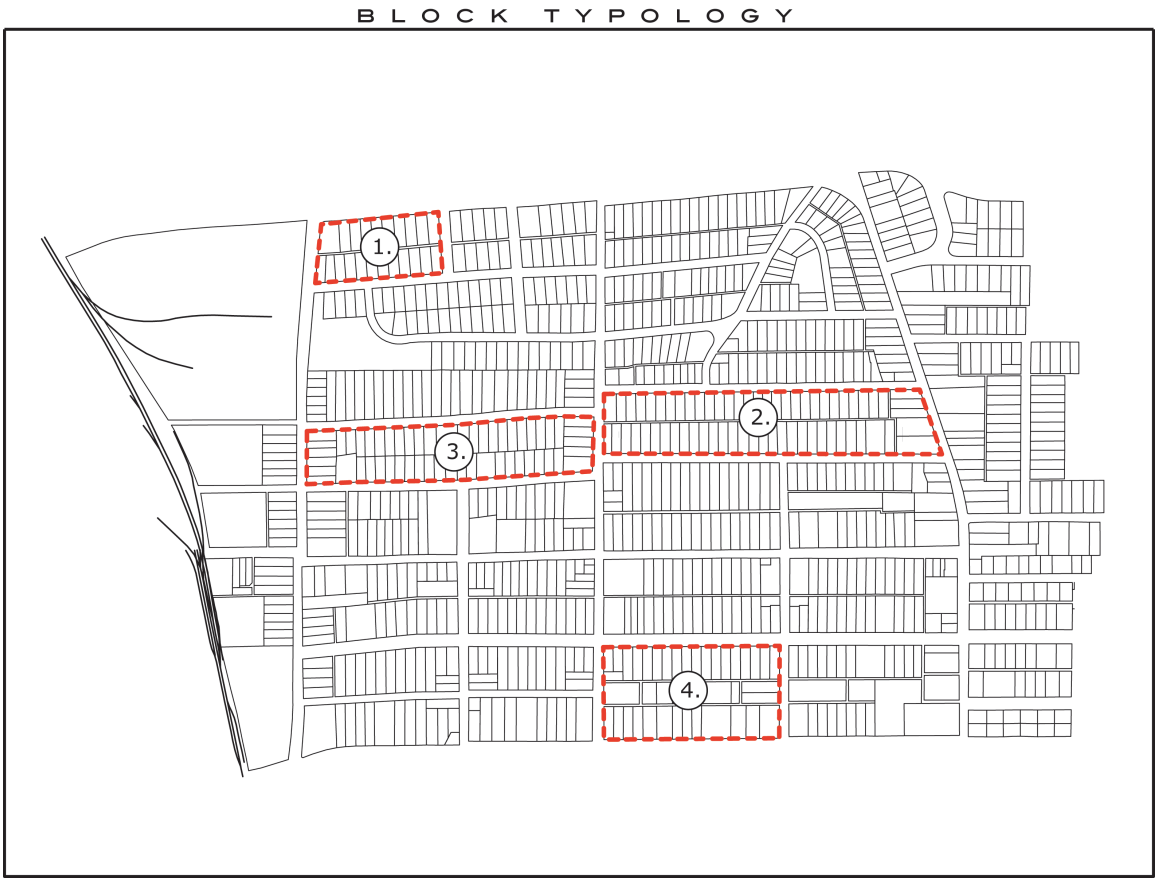


Figure 39: Block typology key map.

creation of extra lots by the insertion of two alleys. A reason for the extra wide block is a reaction to the stream bed as previously discussed. By creating an extra wide block, the stream bed is offset from the middle of the block which keeps the stream bed from flowing down the alley.

Figure 39 illustrates primary examples of the block typology in the neighborhood and Figure 40illustrates how each block in the neighborhood is categorized and how they are distributed within the site. By color coding the block typologies a pattern emerges from their arrangement. This pattern is highly correlated with the street typologies. For example, the three-sided block is located either along the thoroughfare or the connector street. The third side of a three-sided block (the perpendicular oriented lots) always faces the dominant hierarchical street typology. The four-sided

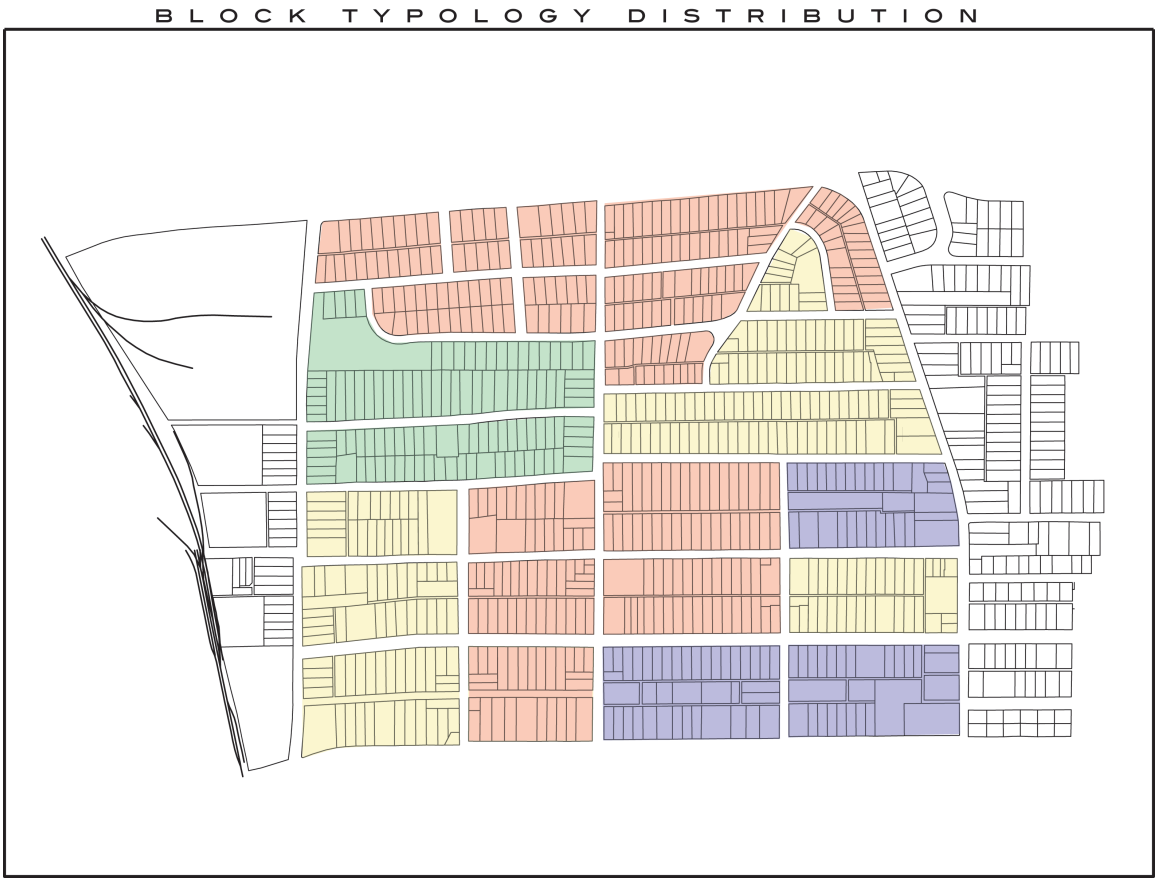


Figure 40: Block distribution map.

block always spans between connector and the through street. The extra-wide block is located by the stream bed and the two-sided blocks are the most prevalent of the block typologies and are found primarily in the middle of the neighborhood along local streets and along Virginia Avenue. This correlated pattern between block typology and street typology begins to set up a coded structure that heavily influences the urban form of the neighborhood.

6.2.3.3 Buildings

Building typologies are divided into three sub-sections:housing, apartments, and commercial and Figure 41illustrate how the land uses are distributed throughout the site. The housing typology is divided into three groups based on their shape and orientation as seen in Figure 42. The distribution of the typologies are relatively random throughout the site, though the parallel rectangle housing is focused in the northern part of the site. This spatial correlation relates to the year of subdivision. In the 1920's, when this area was developed, is when the house begins to turn and soon gives birth to the carport. Figure 43 illustrates the housing typology variation and distribution throughout the neighborhood. How the building connects to the site by relating to topography is an important characteristic by helping to define the street. Also, the porch is an identifying character for each housing typology. The porch extends the facade of the house towards the street reinforcing the public/private boundary. This is seen in Figure 41A. By only drawing the porches, illustrates how effectively the porch holds the street front for the entire neighborhood through the prevalence of its use and location on the lot.

There are five different apartment typologies as illustrated in Figure 44 The neighborhood's announcement of listing in the national register of historic places indicates that there are three types, the country house, garden and hotel-type apartment. Number 1 and 2 can be classified as the garden typology. It is important to denote their differences, because apartment type 2 is used often in later periods by removing the garden aspect and replacing it with parking. Apartment type 3 and 4 can be grouped in the hotel-type, though type 3 more realistically resembles this group, their main difference is their orientation to the street and the lot types needed for each. Type 5 is the country-house typology and closely resembles the square housing typology. Apartments are concentration in the bottom half the site as seen in Figure 41 B. Figure 41 B also illustrates the duplexes in the neighborhood with the non-poche shapes.

Figure 41: Building distribution map: Above (a) Porch distribution; Middle (b) Apartment and duplex housing distribution; Below (c) Commercial distribution.

Figure 42: Housing typology.

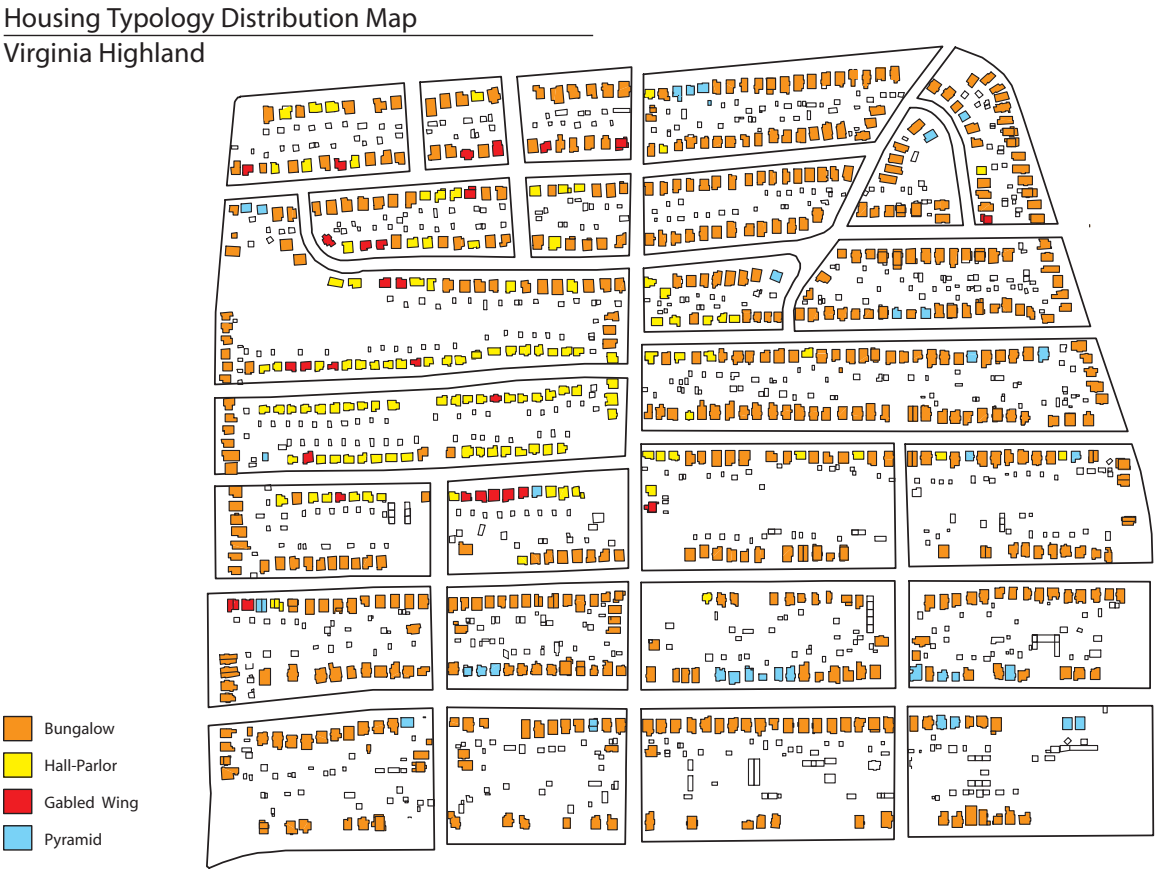


Figure 43: Virginia Highland has a variety of housing typology dispersed throughout the neighborhood.

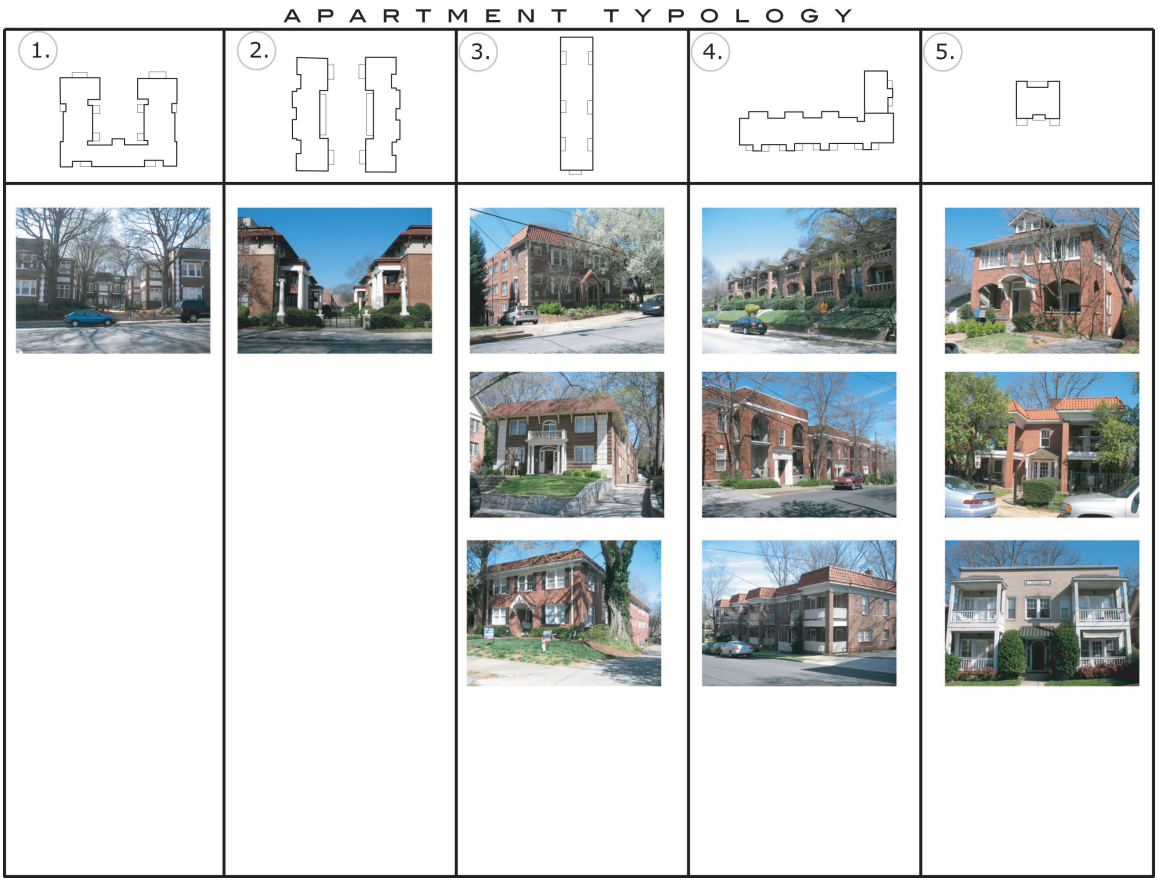


Figure 44: Apartment typology.

This distribution corresponds to two factors the date of subdivision and the location of commercial. One may think that the trolley line would effect this distribution but the distribution map does not illustrate such correlation. The later subdivision came with the social ideology that apartments were "bad" and should not be combined with single family neighborhoods.

There is only one typology for the commercial building typology and that is the storefront seen in Figure 45 Though housing typologies were used for commercial use, it is important to understand that type does not dictate use. Different types can evolve different uses even though their typology may be associated with a particular use. This often is a good occurrence by bringing variation to the built environment. Though the use of a housing typology may change to commercial, this does not

justify a classification as a commercial typology. A further historical study of the site illustrated that commercial buildings would be placed in front of previous housing typology and also behind the building to turn the alley into a street function by using its street presence. This is a great example of how buildings can change over time when the demand and economy changes in order to support such use and density. Since land value in Virginia Highland is presently very high, this same process of turning alleys into streets is being utilized. Figure 45 graphically represents this process. The distribution of the commercial typology is very isolated to periphery of the site with a large concentration on North Highland Avenue particularly the southern section. (See Figure 41C.)

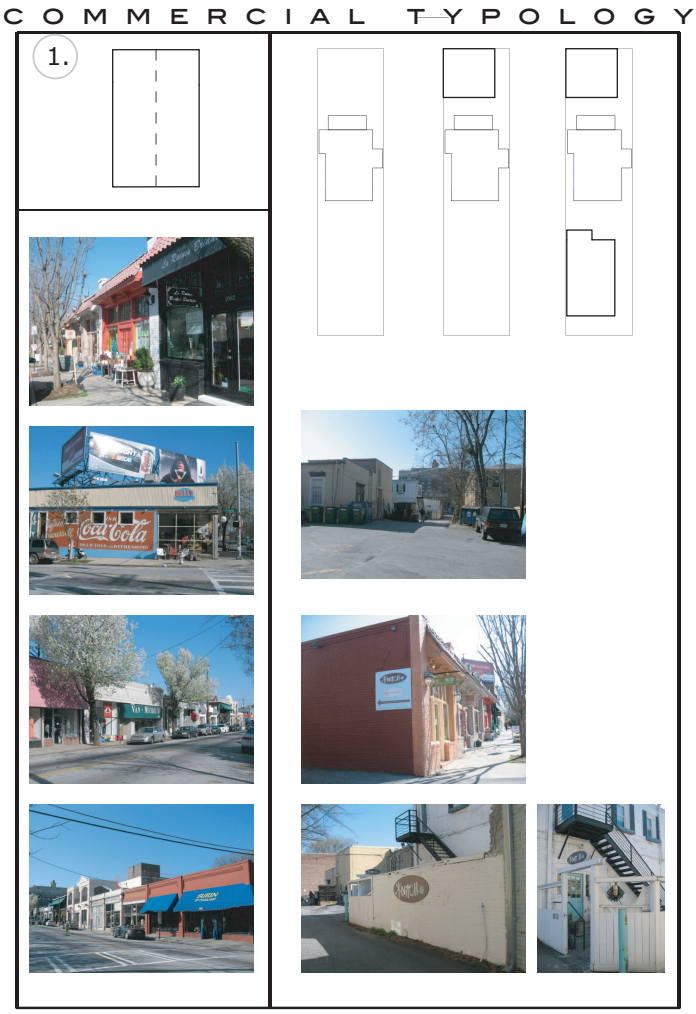


Figure 45: Commercial typology.

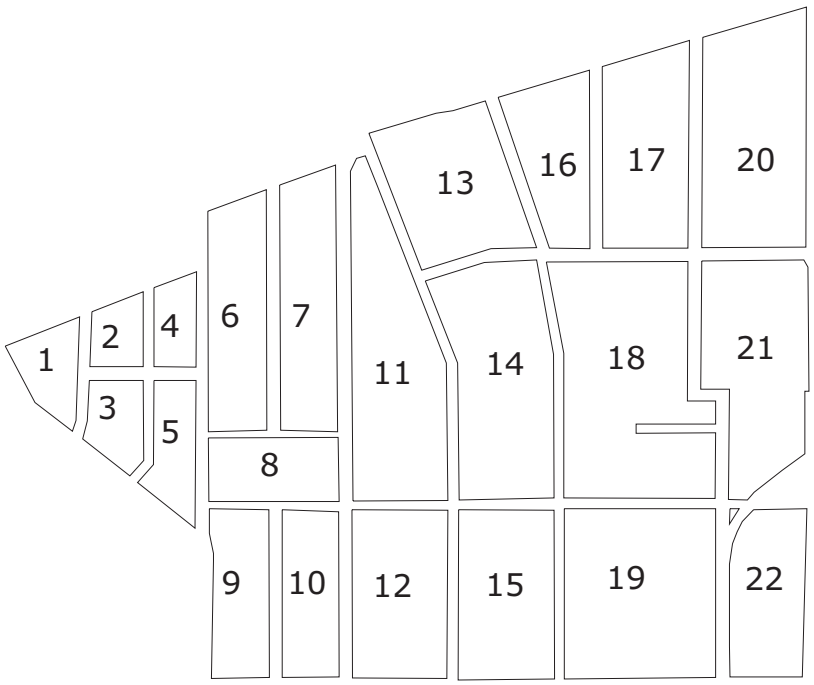


Figure 46: Cabbagetown site map with numbered blocks and street names.

6.3 Cabbagetown

6.3.1 Identifying the Site

The coding site for Cabbagetown follows the city's established neighborhood boundary(see Figure 22). The site is bounded by the Georgia Railroad to the north, Pearl Street to the east, Fair Street/Memorial Drive to the south, Boulevard to the west and anchored by the Fulton Bag and Cotton Mills on its northwest corner. Figure 46 labels the site for future reference. The blocks are arbitrarily numbered and have no relationship to any other pre–established numbering system (such as the block numbering system of the City of Atlanta).

Figure47 illustrates the main defining elements of the site, which includes the Fulton Bag and Cotton Mills, Oakland Cemetery, the Georgia Railroad, the Decatur Trolley Line (No.1) and the South Decatur Line (No.18) which runs North on Euclid Avenue and East on Fulton Terrace resulting in the gradual curve of the street. An additional Trolley ran north on Berean Street and East on Tennelle/Wylie. The line

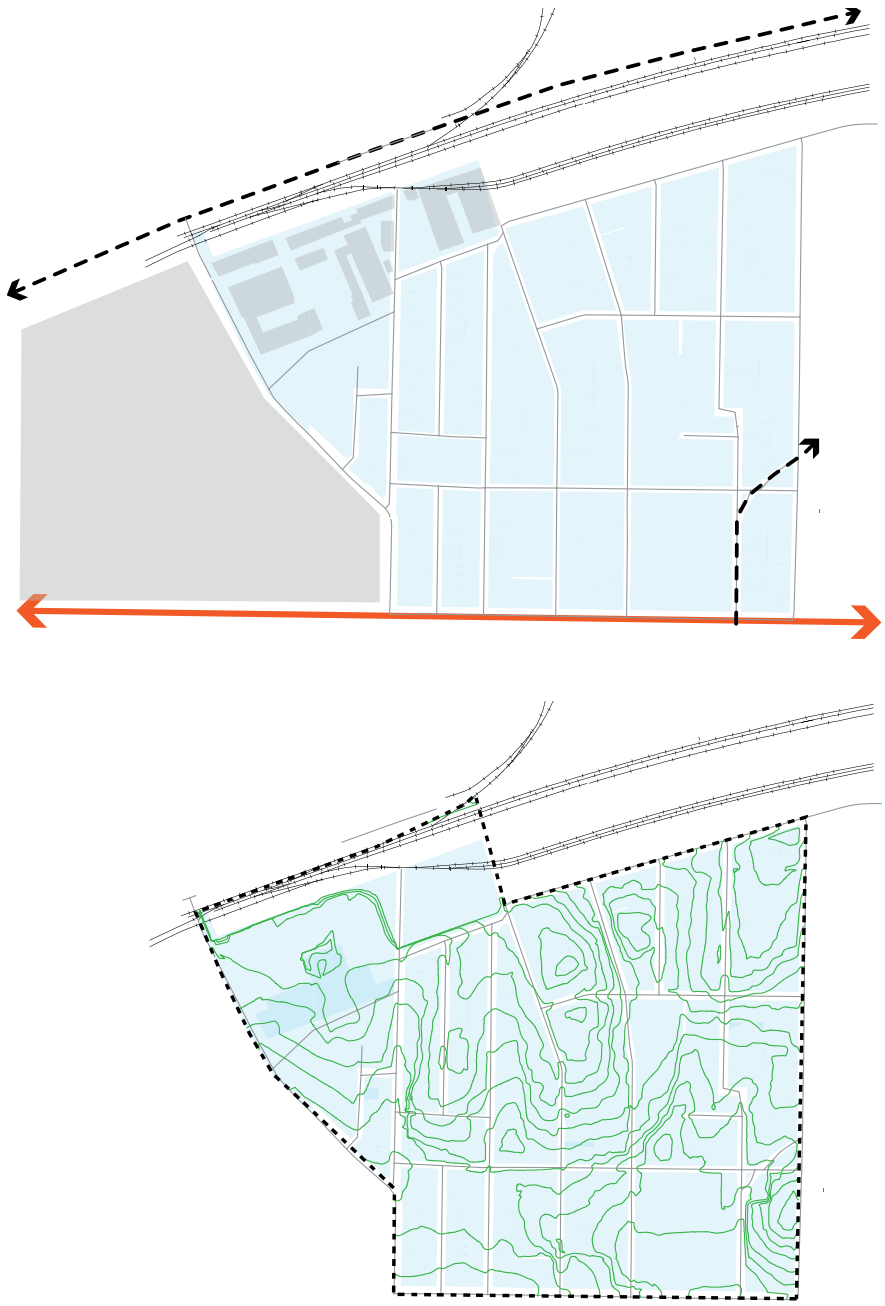


Figure 47: Defining elements: Above (a) Transportation elements; Below (b) Natural elements.

was present in 1892 but was decommissioned by 1894 with the addition of line No.18. Fair Street/Memorial Drive is a historical regional connector street and one of the original defining elements of the site.

6.3.2 Situating the Site

Cabbagetown was developed as a mill village when the Fulton Bag and Cotton Mills moved to the location in 1891 and originally occupied the northeast corner of the site. Before this, the site was primarily defined by Oakland cemetery, the Georgia Railroad, and the Old Rolling Mill, a mill burned down during the Civil War. Oakland cemetery was created in 1850 in what was then considered the outskirts of the city. The cemetery grew to its present size by 1867. The shape of Oakland cemetery is a very important defining element. Cemetery's shape coupled with the present stream bed helped to define the location of what would be known as Boulevard (See Figure 48) and the western shape of the neighborhood. When the trolley was first implemented, the Decatur Street line in 1870 went as far east as Oakland cemetery. By this time houses and small communities began to develop in the area. By providing efficient mass transportation, the trolley did the same thing for Cabbegetown as it did for Virginia Highland, it allowed neighborhoods to develop spatially disconnected from the city center. Figure 48 illustrates that before the arrival of the factory, some of the land was evenly subdivided with houses already present.

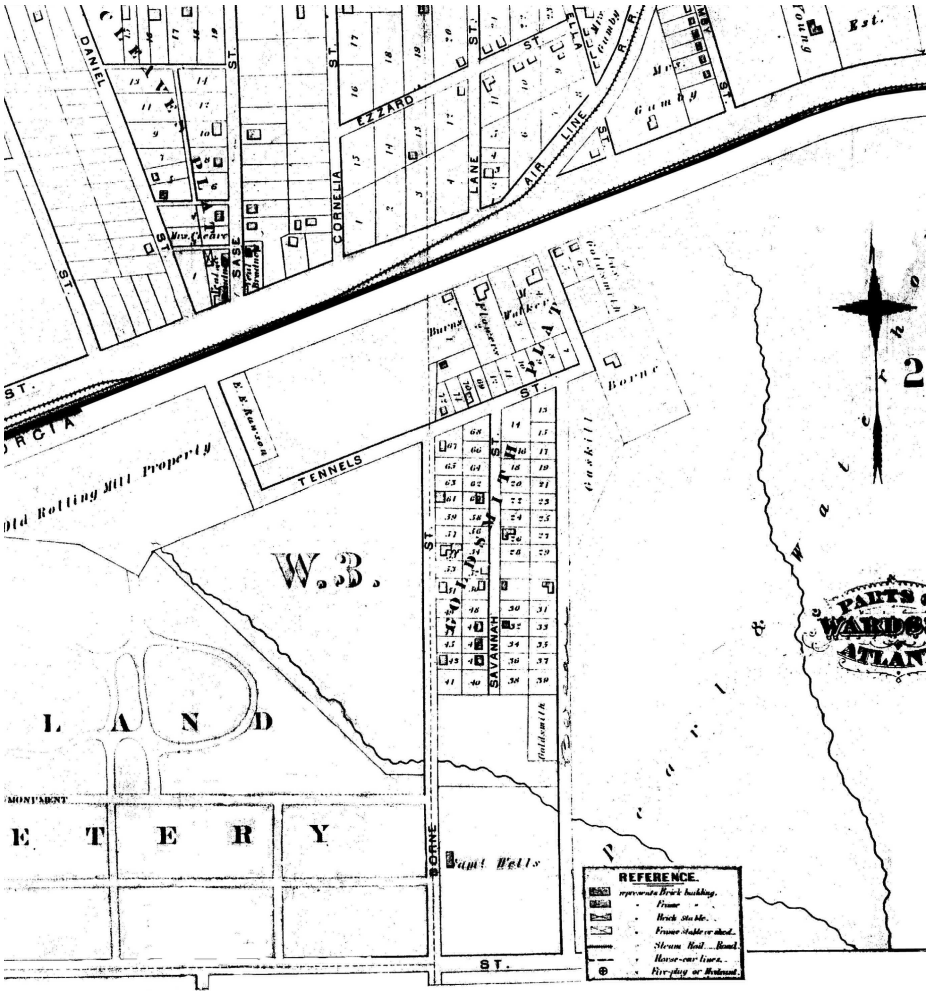


Figure 48: 1878 subdivision map.

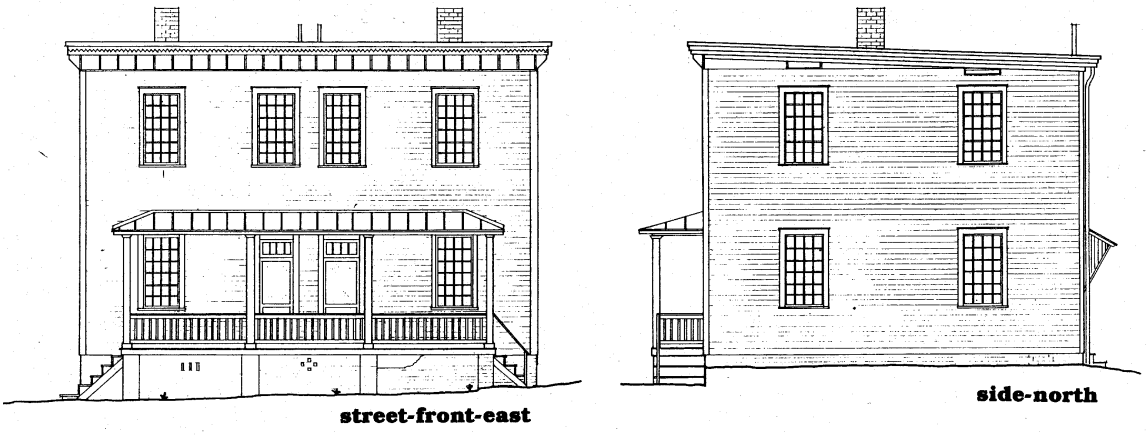


Figure 49: Elevation drawings of the the tenement housing that the mill provide on it's factory lot.

The Fulton Bag and Cotton Mill moved to the area from its previous location on Pryor Street in downtown Atlanta. Though there was already a small residential community present, the factory demanded many workers and these workers would need places to live. The majority of the workers came from the Appalachian Mountains and moved to the area for the opportunity of work. Since housing was limited, the mill constructed work housing. Figure 52 illustrates the subdivision map for 1899 and its corresponding figure ground. The mill housing was located directly south of the mill on blocks 1-5 and known as "Factory Lot." The mill shipped in houses from other milltowns in the Northeast. Figure fig:tenement illustrates the elevations of some of the housing that the mill used. Usually four families would live in each building. These buildings were unique to the Southeast as notable by the sloped roof.

The blocks of "Factory Lot" were not subdivided into lots. Since the mill owned the land and rented the housing to the working, there was no need to further subdivide. The disconnect between the blocks and their internal subdivision, is one of the main distinguishing factors of Cabbagetown from Virginia Highland. Overtime the mill would buy more land and houses to provide for the increase of workers.

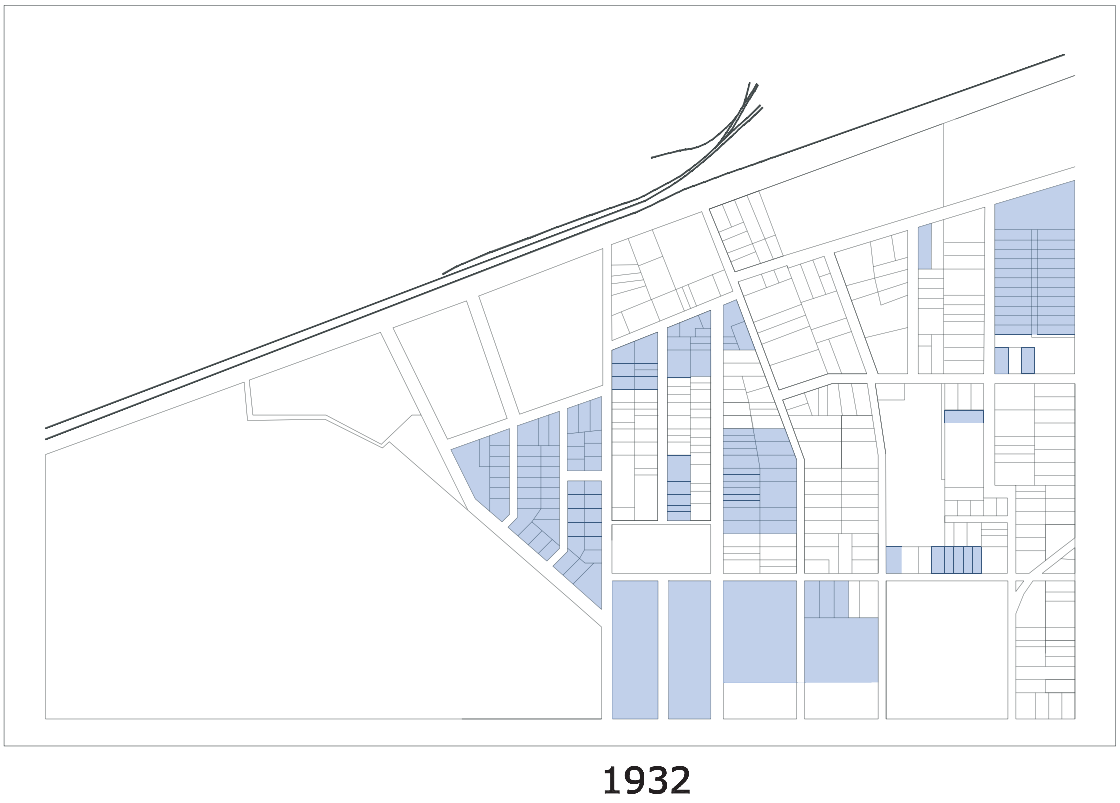


Figure 50: The property throughout Cabbagetown that was owned by the mill.

The neighborhood was not entirely owned by the mill, but the area was primarily occupied by mill workers. Figure 50illustrates the amount of property the mill at one time owned. The lack of private property, as seen through mill ownership, and also with high renter rates, is one of if the main reason for the degradation of the initial subdivision of the neighborhood. As seen in Figure 53 the regular subdivision of territory of blocks 6 and 7 breaks down from 1878 to 1899. This trend continues in the further development of Cabbagetown resulting in a situation in which the building typology is a more influential urban component than the lot. Block number 9 and 10 in Figure 54 and Figure 55 further illustrates the disconnect between block, lot, and building typology. The original block is not subdivided and is instead one large parcel, yet there are many buildings distributed throughout the parcel. More buildings are added when the block is further subdivided into two blocks with the creation of what is now Iswald Street. As seen in Figure 50, the block was property of the mill. The signal ownership of the property disregards the necessity of the lot and building relationship as seen previously in Virginia Highland and as Moudon illustrates with her San Francisco study. Cabbagetown's subdivision evolved in a very sporadic manner. This pattern can be seen in Figure 51. Cabbagetown was seen as a great place for investment property. This is evident, not only by the majority of rental property throughout the neighborhood, but also from the Adair's auction maps for the neighborhood when parcels were initially subdivided for sale. This process of buying land for investment as well as the mill ownership accounts for degradation of the lot as a key component of the neighborhood. Once the land was subdivided in a systematic manner, investors would buy multiple parcels and combined the lots place houses on the combined lots in whatever manner the seem fit. The buildings and their typologies were no longer constrained by the dimension of the lot.

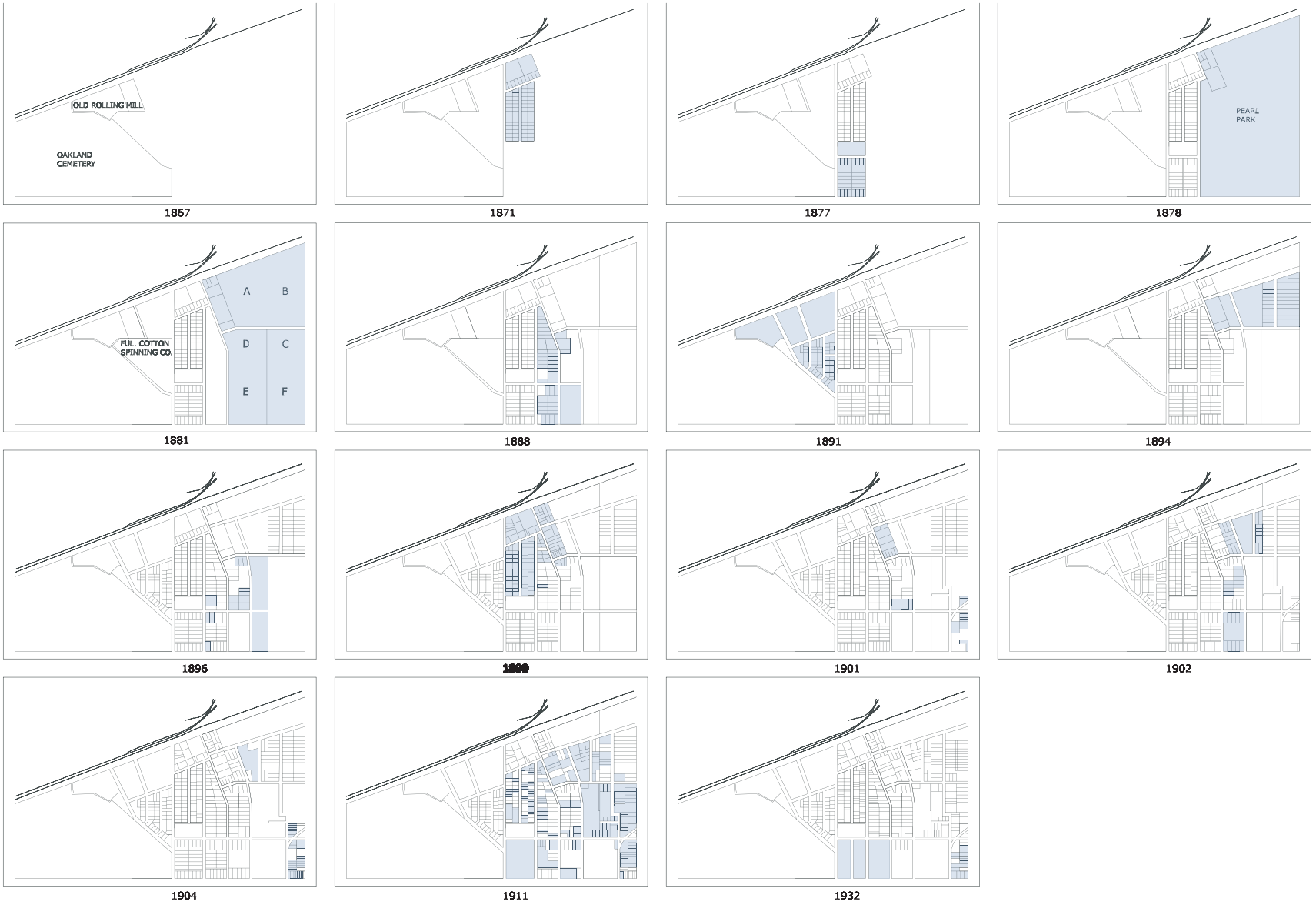


Figure 51: These images illustrate how Cabbagetown's subdivision evolved.

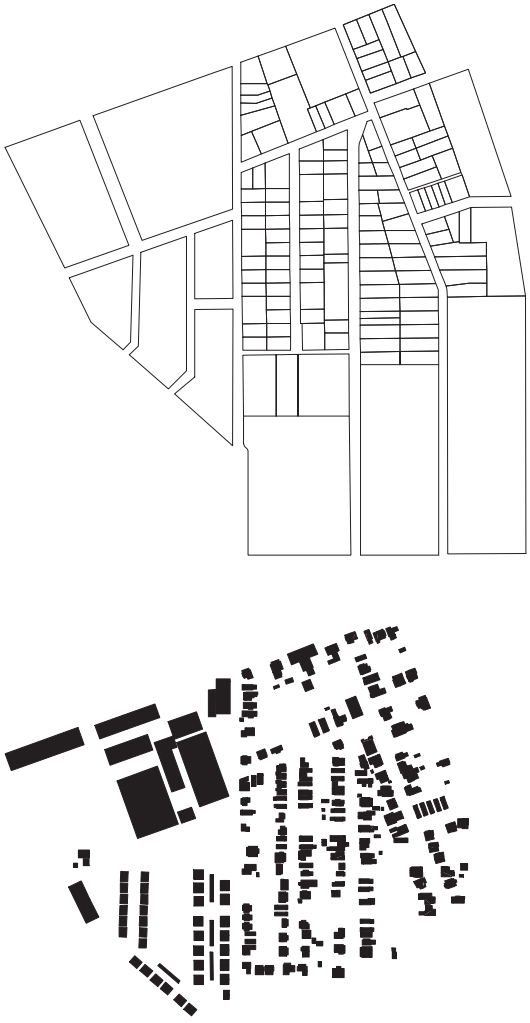


Figure 52: Above (a) 1899 parcel plan; Below (b) 1899 figure ground.

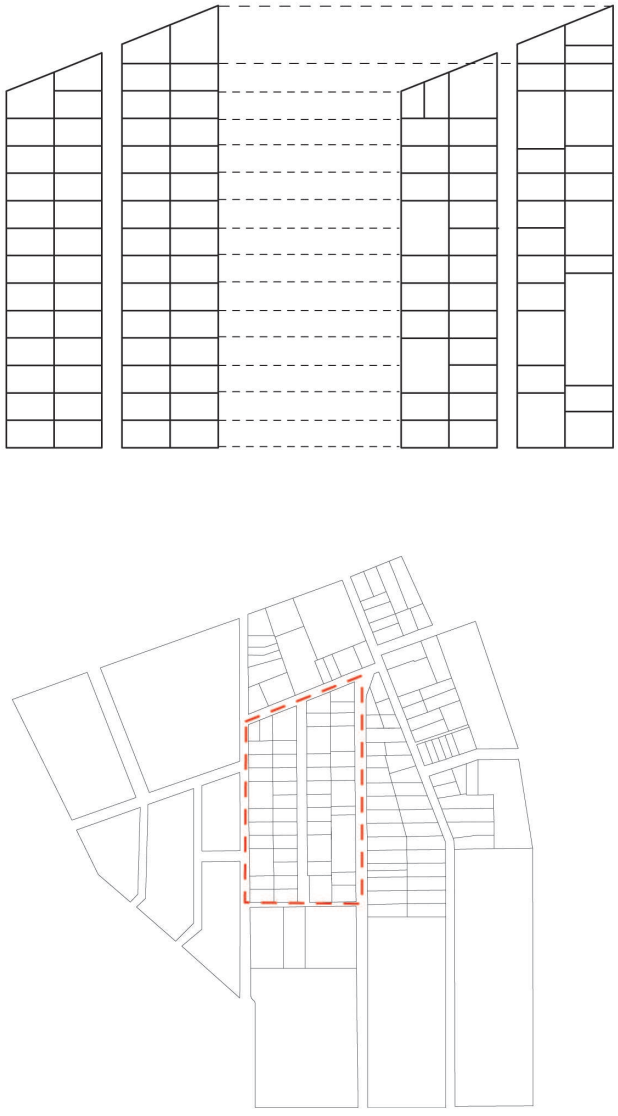


Figure 53: Degradation over time of the regular subdivision of lots.

Figure 54: Above (a) 1911 parcel map; Below (b) 1911 figure ground.

Figure 55: Above (a) 1932 parcel map; Below (b) 1932 figure ground.

6.3.3 Typologies

6.3.3.1 Streets

The neighborhood components are divided into three typology sets: blocks, streets and buildings. As previously discussed the the building typology is a more influential urban component than the lot and this results in only one block typology. The streets are divided into four categories: Thoroughfare, Connector, Through and Local (See Figure 56. Carroll Street is a Thoroughfare street. It connects the site to Boulevard and it concentrates the local transportation activity. Carroll Street is the main activity street. It has a very interesting street design as seen in Figure 57. The right–of–way is a very narrow dimension of 30 feet. Within this dimension lies sidewalks, one-sided on-street parking and a two-way road. The building typologies frame the street space by having little to no setbacks. The street primarily consist of storefront and mill factory housing. The spaces between the mill housing is used for street trees. The sidewalk is laden with potted plants, benches, etc which gives the street a rich character. Tennelle/Wylie Street is a prime example of a connector street. The street width is wider and the housing setbacks are larger (see Figure 58)The street runs east/west along the northern border of the site and connects the neighborhood to the chain of neighborhoods to the east (Reynoldstown, Kirkwood, etc.). Gaskill Street is a through street. It runs perpendicular to Cabbagetown's north/south oriented street grid. Gaskill is the only street that internally traverses the site. Its street section is similar to a connector street except for a smaller right-of-way width. Savannah Street is a local street. As seen in Figure 59 the buildings have a consistent and small setback of five feet. The setbacks do not vary according to topography as seen with Connector and Through streets. This creates a well defined public space and also evolves the housing to have a recessed entry.

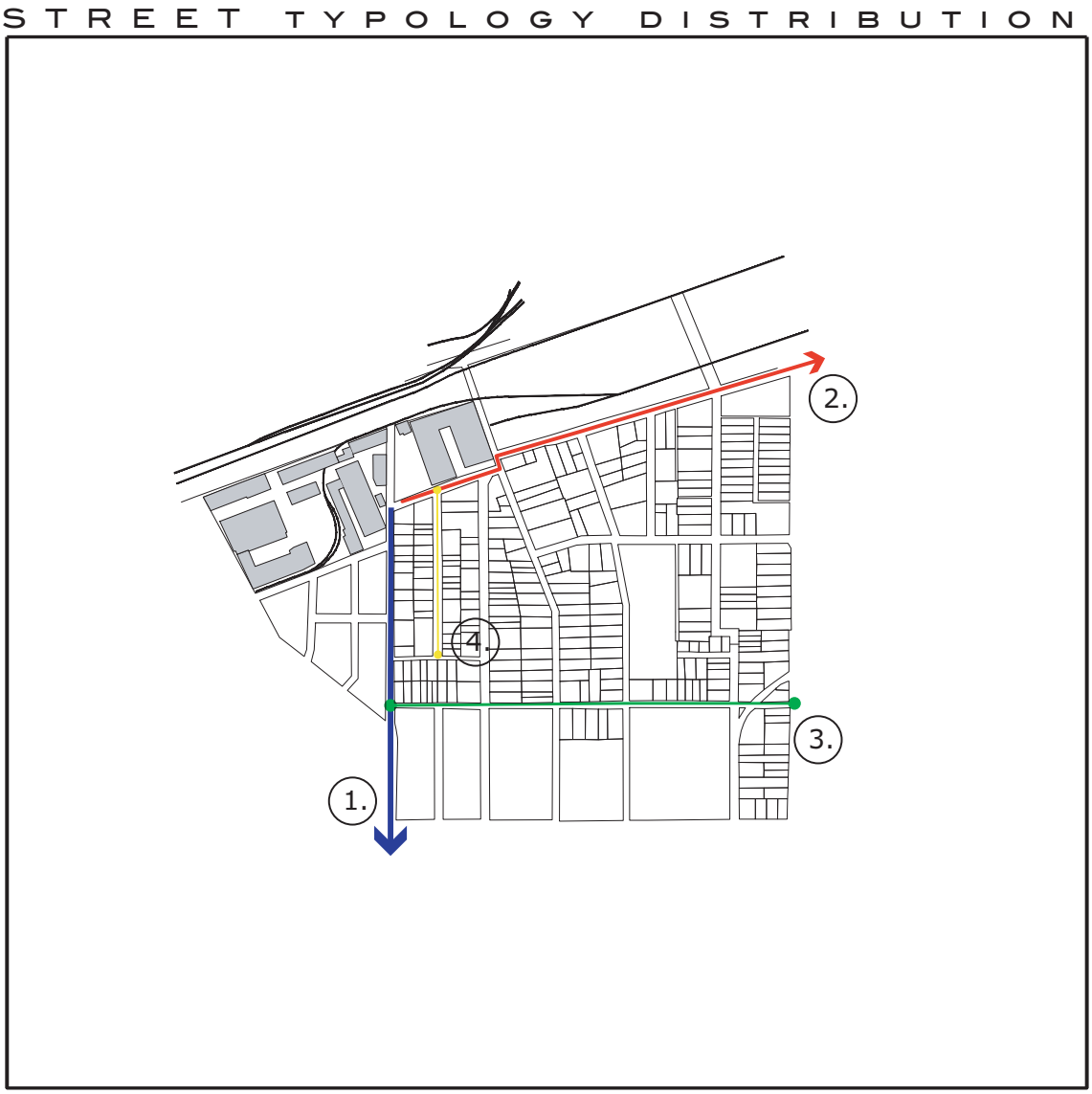


Figure 56: Street typology map.

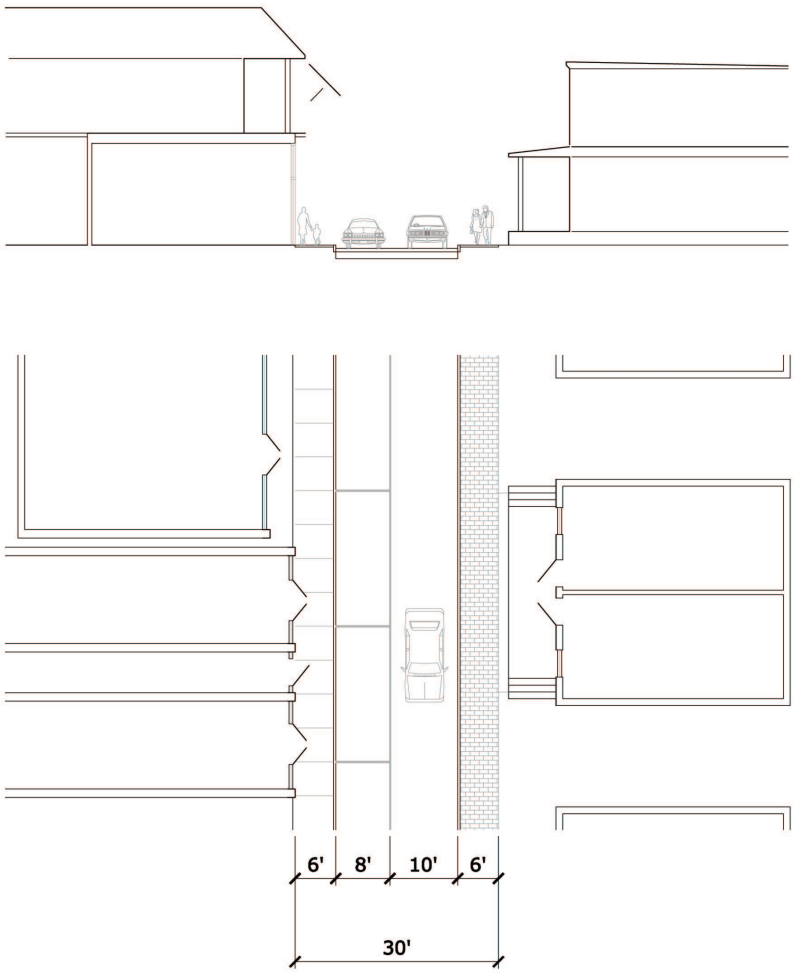


Figure 57: Thoroughfare typology.

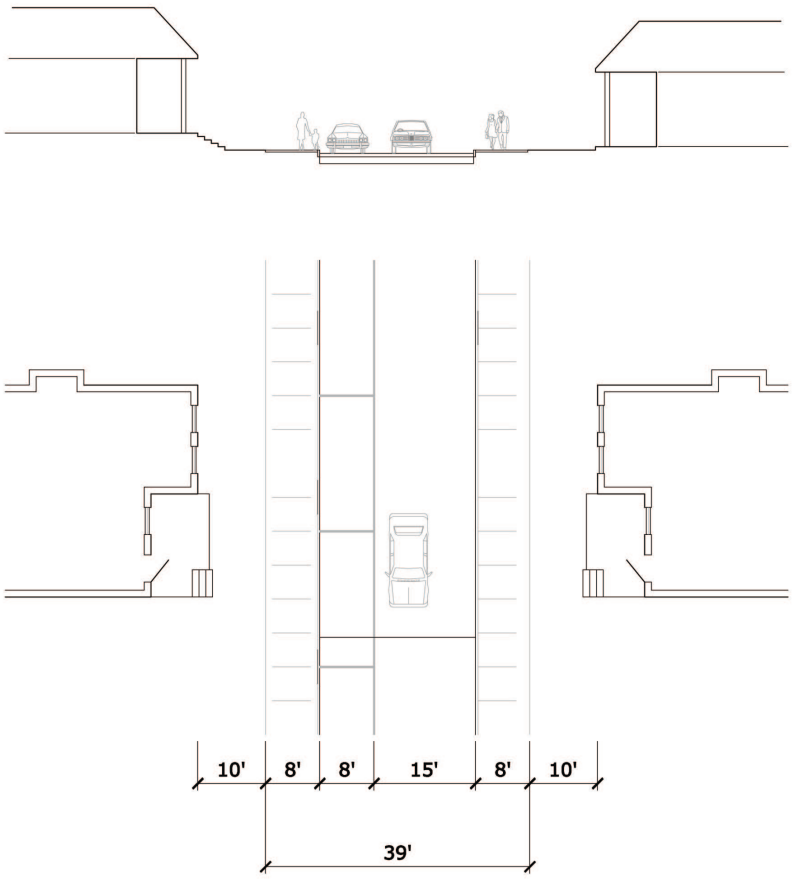


Figure 58: Connector street typology.

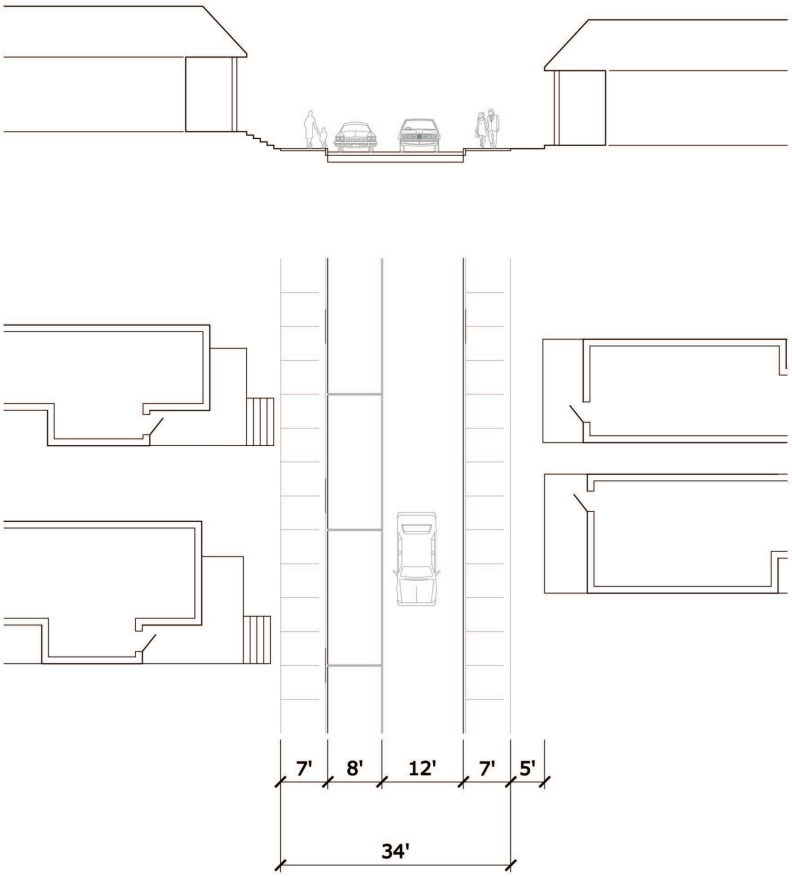


Figure 59: Local street typology.

6.3.3.2 Buildings

Building typologies are divided into two sub-sections:housing and commercial. The site has very little apartments but has a very high density due to the abundance of duplexes and shotgun houses, and therefore the apartment typology is not present in the neighborhood (see Figure 64B). The housing typology is divided into four groups based on their shape and orientation as seen in Figure 60. Cabbagetown has a very varied range of housing typologies from residential to commercial, and these typologies are universally dispersed throughout the entire neighborhood. Though there is some spatial correlation between some housing typologies this correlation is not exclusive which creates a very diverse environment throughout the entire neighborhood. This range of typology dispersion can be seen in Figure 66. As seen in Virginia Highland, the porch is an identifying character for each housing typology. The porch extends the facade of the house towards the street reinforcing the public/private boundary. This is seen in Figure 64A. By only drawing the porches, illustrates how effectively the porch holds the street front for the entire neighborhood through the prevalence of its use and location on the lot. Housing typology No. 1 in Figure 60 is further subdivided into three different categories: the shotgun, double shot gun, and bungalow. This is illustrated in Figure 61. The commercial typology is divided into three groups as seen in Figure 63. Typology 1 is the storefront typology seen in Virginia Highland, but the typology 2 and 3 are new commercial typology that are hybrids of both a housing and commercial typology. These are categorized as commercial and not housing because of how they are situated on the block (no setbacks). The distribution of commercial typology is scattered throughout the site but is primarily concentrated on Carroll Street though to a lesser degree of concentration can also be seen on Gaskill Street.

Figure 60: Housing typology.

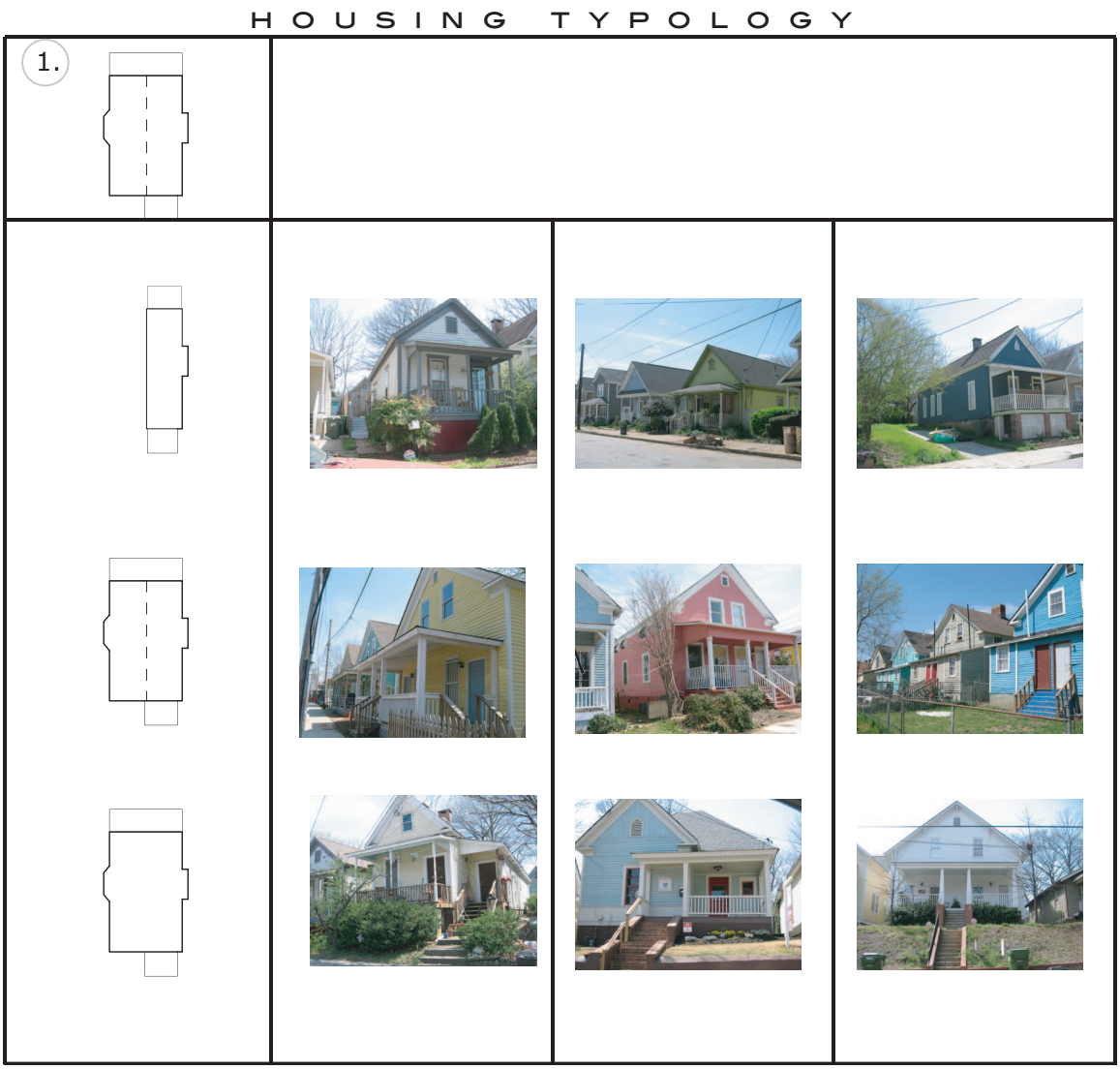


Figure 61: Housing typology subset.

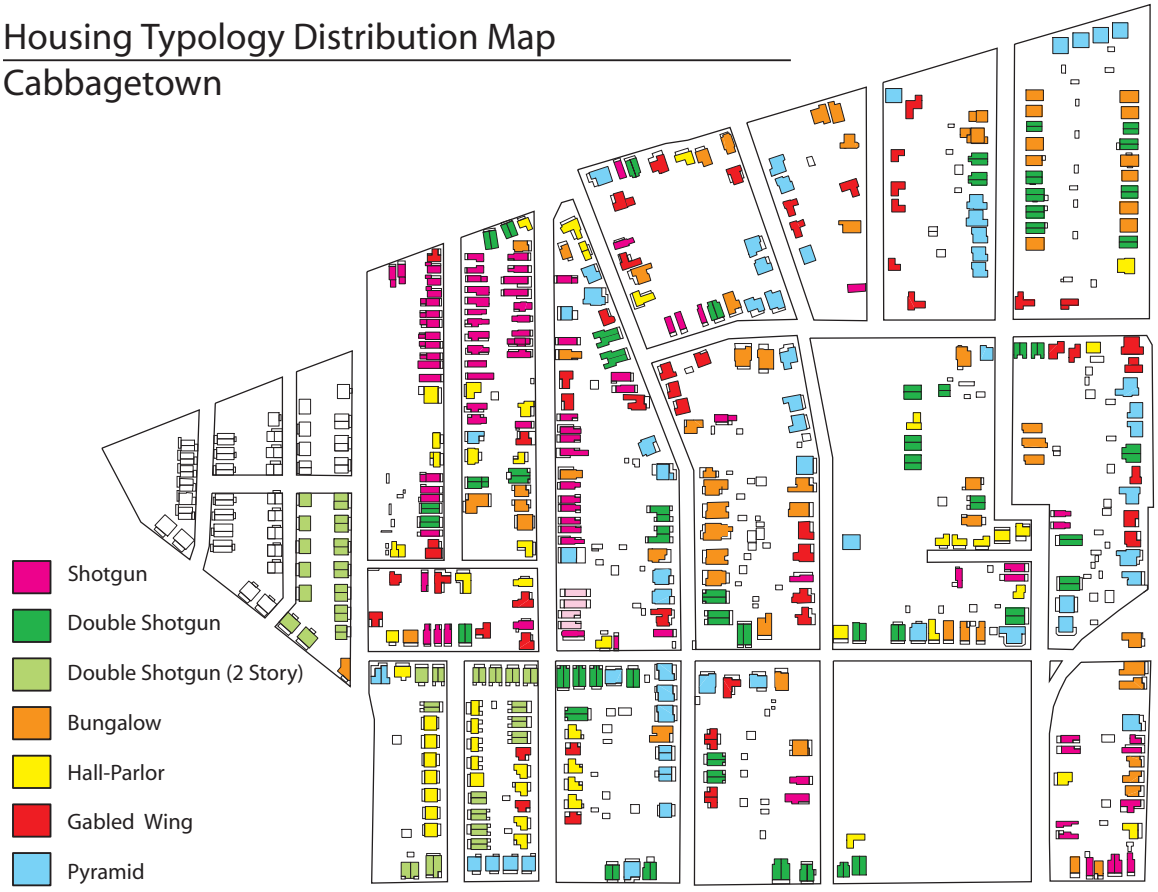


Figure 62: Distribution of housing typology throughout the neighborhood.

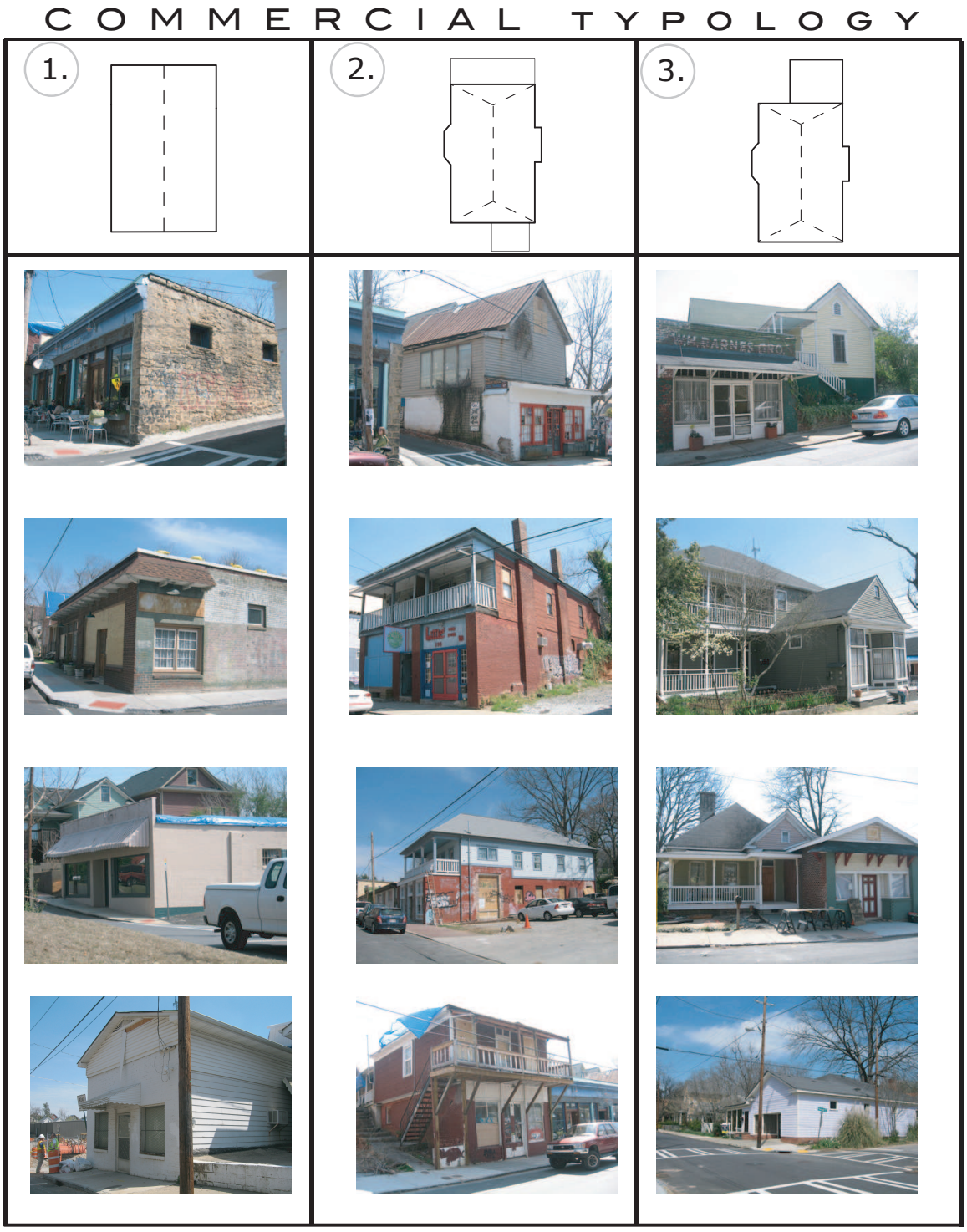


Figure 63: Commercial typology.

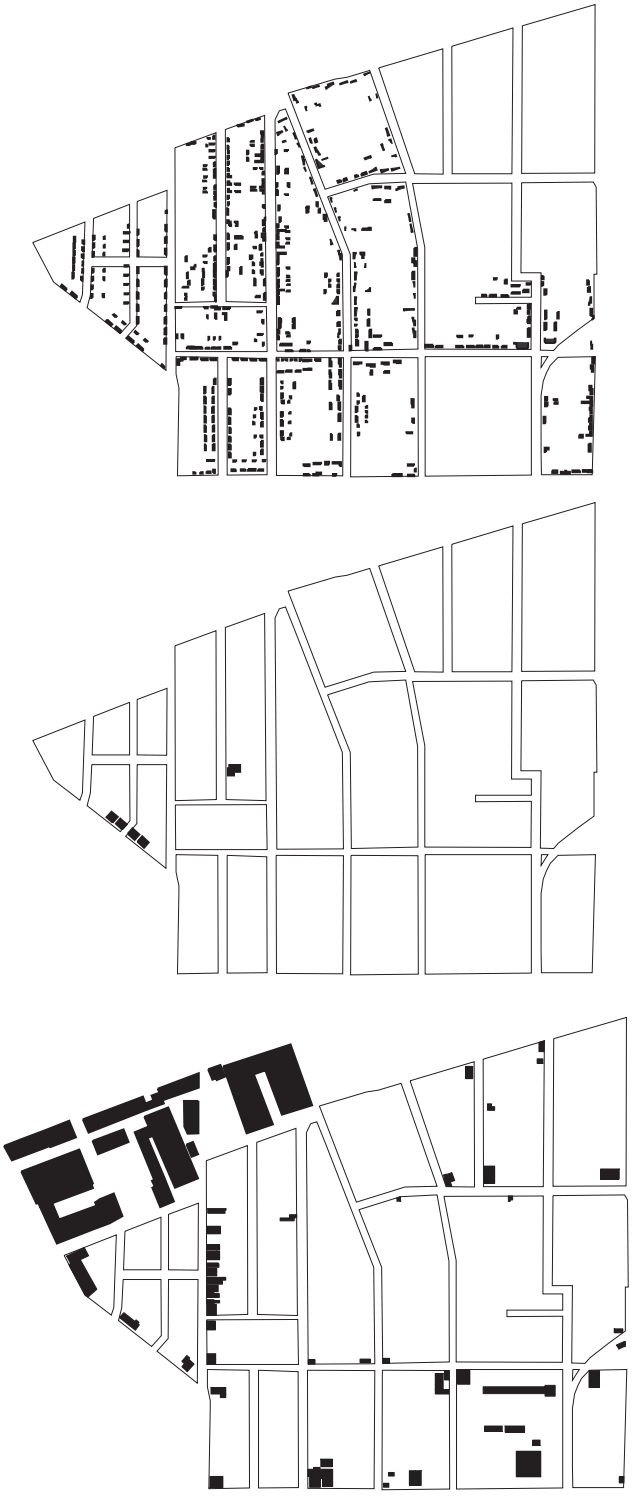


Figure 64: Building distribution map: Above (a) Porch distribution; Middle (b) Apartment and duplex housing distribution; Below (c) Commercial distribution.

CHAPTER VII

SUMMARY AND CONCLUSION

7.1 Neighborhood Comparison

Both Virginia Highland and Cabbagetown represent historical American neighborhoods built before the onset of land regulations. The neighborhoods show a lot of variation in the configurations of their block, lot, street and building typologies. By contrasting these two neighborhoods, we can see that they have significant differences primarily due to the manner in which they were subdivided. Virginia Highland was subdivided in a more traditional way akin to many typical unplanned neighborhoods of its time. Cabbagetown's subdivision process however, makes it distinctly different. Though Virginia Highland was not subdivided at one time, as seen in planned neighborhoods, once it was subdivided, the subdivision did not vary drastically over time. Because the neighborhood had a stationary framework with regard to its blocks and lots, the arrangements and distribution of the building typologies also stayed relatively consistent. Cabbagetown's subdivision, on the other hand, was constantly in a state of flux until the 1950's. The majority of parcels in Cabbagetown did not retain their original lot design. When the land was originally parceled for private sale, this process was relatively similar to the same process seen in Virginia Highland, but the difference lies in how the parcels changed after sale. Figure 65 contrasts the change in the neighborhoods' subdivision from the time of their original subdivision up until 1932 (the date of the most recent Sanborn map used in the documentation process). The images highlight the lots that remained unchanged from the time of the original lot design as well as the lots that changed over time. By comparing the two neighborhoods, Figure 65 illustrates the drastic difference in how Virginia Highland and

Cabbagetown's subdivisions evolved over time.

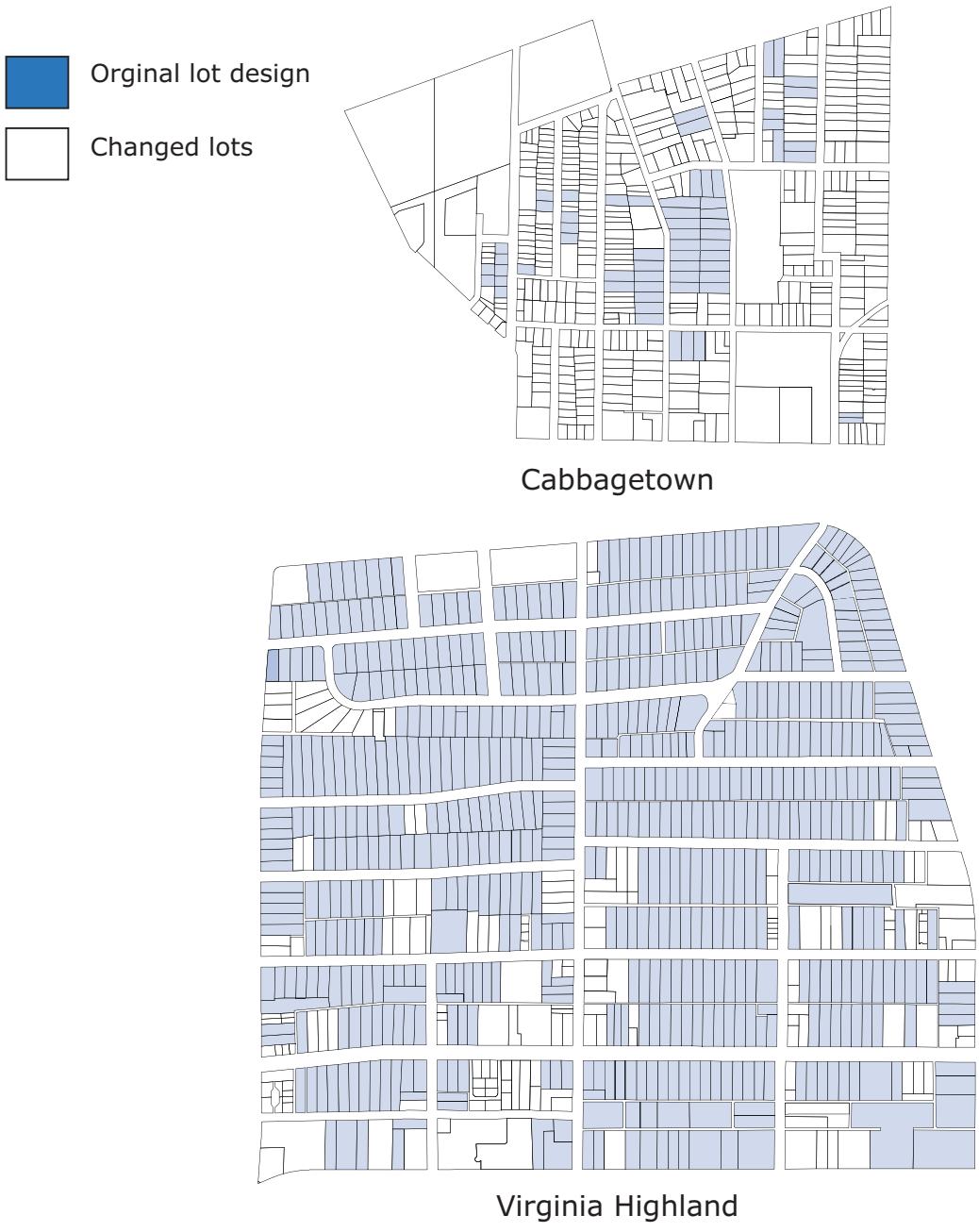


Figure 65: The comparison illustrates the large extent that Cabbagetown changed overtime.

The differences in the neighborhoods' subdivision result in different building distribution. Figure 66 contrasts the distribution of housing typologies throughout the two neighborhoods. Cabbagetown has a wide variety of housing typologies and a varied distribution pattern of these typologies. This pattern can be attributed to the unique subdivision evolution of the neighborhood. Adjacent parcels in Cabbagetown were frequently purchased and combined to form larger parcels. The outcome of this process was not an array of larger buildings, but a varied arrangement of buildings typologies found in middle class neighborhoods. Land owners filled their lots to suit the market of the neighborhood. It was not uncommon for these larger parcels to contain several buildings per parcel. For example, it was common to have a large parcel that contains a shotgun, next to a pyramid cottage, next to a double shotgun. Since buildings were not confined to a rigid framework of identical lot design, as seen in Virginia Highland, the urban form of the neighborhood evolved in a unpredictable pattern.

7.2 Regulation Analysis

I utilized the information derived from the documentation of Virginia Highland and Cabbagetown to analyze Historic Preservation Ordinances and the SmartCode. For this analysis, I examined the Historic Preservation Ordinances in Atlanta, Georgia paying special attention to Cabbagetown's ordinance and the standard SmartCode template DPZ utilizes for new municipalities as well as the SmartCode newly adopted for post-Katrina Gulfport, MS. For both of these regulations, I was able to discern key characteristics which constitute some of the problems with these ordinances. The overarching problem for both ordinance is their lack of reference to site specific characteristics. They do not acknowledge or account for the aspects of a site that add to the unique character of a place and that make every place unique.

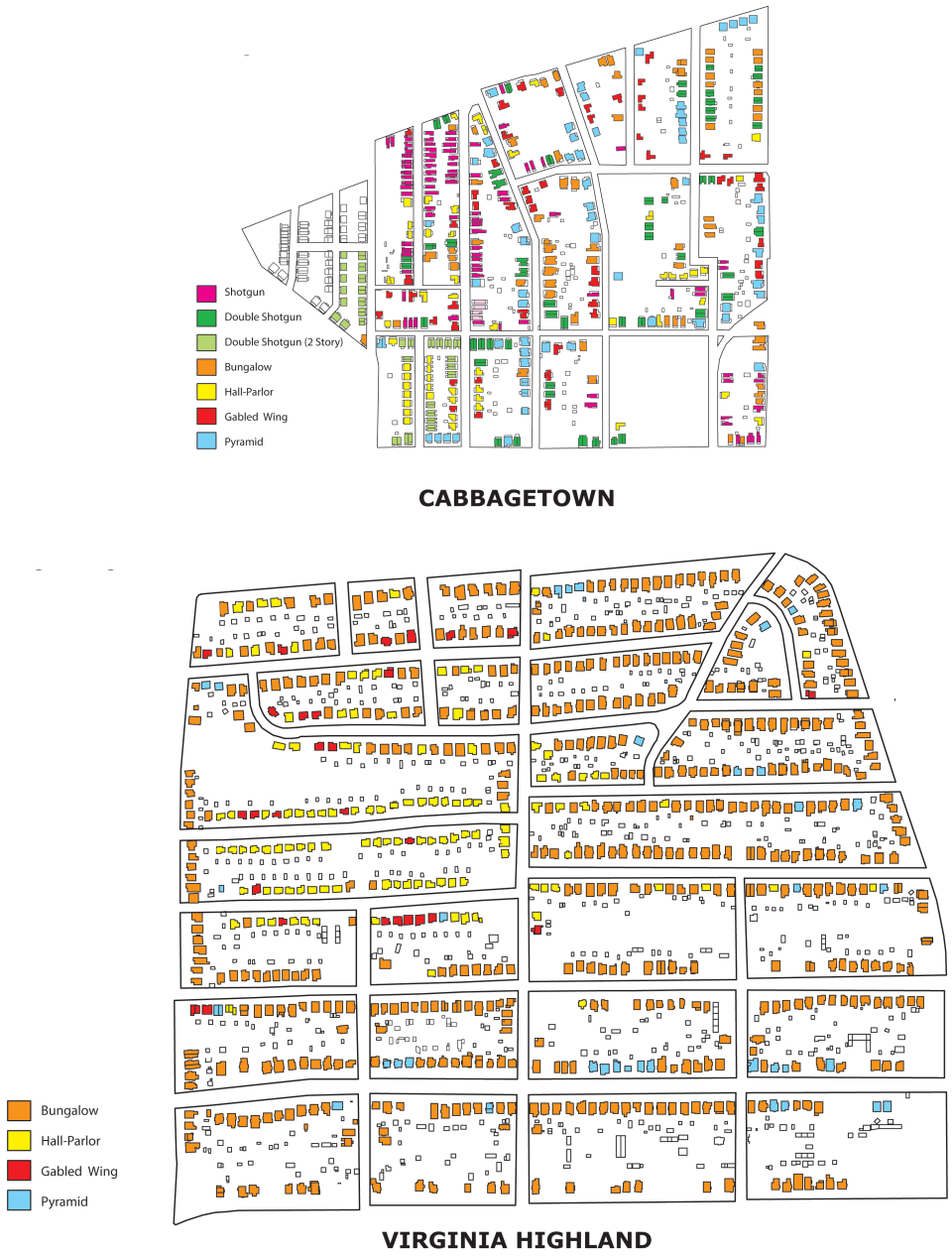


Figure 66: The comparison of house distribution between Virginia Highland and Cabbagetown.

The main problems associated with Historic Preservation Ordinance can be attributed to its misunderstanding and or its misprioritizing of a buildings' style over its type, the lack of emphasis on subdivision, and its use of the "compatibility rule." First of all, as we have seen with Cabbagetown's unique subdivision evolution and the block typologies of Virginia Highland, subdivision plays a significant role in the composition of the overall neighborhoods, yet historic preservation ordinances pay very little attention to these characteristics of neighborhoods and only mentions them in passing. The variation of building typologies utilized in historic neighborhoods make up one of the most important components of a neighborhood. Currently historic preservation regulations govern a building's style instead of its type. Building typology is not even mentioned in Cabbagetown's Historic Preservation Ordinances for example. Instead the term style is used everywhere that typology should be utilized. This problem is not merely a semantic problem, the two terms refer to drastically different aspects of buildings. The style of a building is a subset of its characteristics attributed to the aesthetic ornamentation of a building, like adding curtains to a room. The type of a building is the more historically relevant characteristic because building forms can be traced to certain time periods and geographic regions where style can be used interchangeably with different typologies. The type is also an intricate component of the overall urban form because it effects the enclosure and definition of the pubic space. The 1916 New York zoning ordinance understood this important difference as did Kwartler in his comparison of the 1916 and 1961 ordinances.

Finally, the "compatibility rule" utilized to create site specific variation is actually an extremely inflexible and limiting rule. The compatibility rule is made up of two parts: the block face and the 10% rule. The block face determines the context of compatibility to which new developments must adhere. Only new buildings built in the same style as existing buildings on the target block face will be permitted. Since the public space is not defined by a single side of the street, this compatibility context

is insufficient. The compatibility context should be extended to at least the block faces that comprise the public space. Therefore, if the new development is located in the middle of a block, the compatibility context should comprise the block face where the building is located as well as the block face on the opposite side of the street. This context limitation would be adequate for Virginia Highland but it still would be too limiting to create such a varied environment as Cabbagetown. Figure 66 illustrates the diverse distribution of building typologies justifying extending the context used for compatibility. For the case of Cabbagetown for example, the context should be extended to the entire neighborhood, minus the factory lot.

For the SmartCode, I utilized the T4L transect for my analysis since this is the transect which best corresponds with the two neighborhoods. The main problem with the SmartCode is its over simplification of typology, from the building to the street. For the building typology, the code only uses single-family housing for the residential typological categorization and does not include any typological designation for commercial use. The residential typology categorization should include multi-family housing. For example, in Virginia Highland, there are four different apartment typologies present throughout the neighborhood. Commercial typologies should also be utilized in the same manner as housing typologies in the code for there is a range of commercial building typologies throughout both neighborhoods.

Another example of how the SmartCode oversimplifies typology is the definition of the grid system. The SmartCode defines the composition of the grid to be made up of primary and secondary streets. It uses the grid system to change rules governing other typologies based on if they are located on a primary or secondary street. Both Virginia Highland and Cabbagetown have a larger classification of streets than just primary and secondary. Virginia Highland has a detailed block typology of four different typologies that works in conjunction with the street typologies (also four typologies) and is a better representation of how blocks should be defined for neighborhoods. The

idea of changing rules for typologies depending on location is a strength but it should not be limited to only street directionality. This use of location based rules is seen throughout Virginia Highland but it is a more complex rule system that utilizes more component variability such as the arrangement of the block and street typologies.

Additionally, the rules used to govern typologies in the SmartCode do not account for site specific characteristics, such as topography. The setback rule for the housing typology illustrates a great example of why this is problem. As seen in both neighborhoods, the setback for housing varied depending on whether the building was located on an increasing slope or a decreasing slope (setbacks are larger for steeper topography and vice versa), yet this type of detail is missing in the SmartCode.

7.3 Conclusion

In this thesis I began with an overview of the history of regulation and private property in the United States focusing on the subdivision process and the impact of regulations and standards on the evolution of the American city. My thesis goes on to examine historic preservation codes and New Urbanisms SmartCode to ascertain their impact on the built environment. I analyzed whether these codes promote developments that exhibit the essential characteristics that constitute historic American neighborhoods. I conducted this research by performing a detailed historical and morphological analysis of the evolution of two historic Atlanta neighborhoods: Virginia Highland and Cabbagetown. During this process, I uncovered their urban architectonic principles such as building typologies and subdivision processes. I then compared these components to the regulations and gave examples of how the codes fail to regulate for these essential characteristics. I illustrate that the main downfall of both the SmartCode and historic preservation regulations is their oversimplification of rules and requirements. Historic preservation ordinances lack the understanding of the historical context of the places they are regulating and the SmartCode operates

on too narrow of an understanding of the complexities and differences that exist in historic American neighborhoods around the United States.

Though this thesis did not aim to write a new code that could reproduce neighborhoods like Virginia Highland and Cabbagetown, I think this is a step towards producing such a document in the future. I hope that this work has shed light on the regulatory process with regard to the complexity of the subdivision process and the variation across both building and street typologies. I have tried to reemphasize the importance of subdivision as a vital component of the built environment by illustrating its historical importance in the development of the United States and as an essential component of American neighborhoods. I have also tried to illuminate the differences in building typologies, how they are an essential component of the built environment but that they also need flexibility to evolve into new forms while maintaining the public space. Finally, I hope to have illuminated the necessity and problems associated with standardization. Standardization has enabled our built environment to develop efficiently, from the National Land Ordinance to balloon frame housing, but when standardizing land regulations, as in the case of Euclidean Zoning,this has not been the case. Our governments cannot reinvent the wheel every time that land needs to be regulated, but at the same time the regulatory process needs to be consistently examined to ensure that it produces the intended outcomes.

APPENDIX A

5^{TH} AND 14^{TH} AMENDMENT

The 5^{th} Amendment (the takings clause and public use doctrine)

No Person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, except in cases arising in the land or naval forces, or in the militia, when in actual service in time of war or public danger: nor shall any person be subject for the same offense to be twice put in jeopardy of life or limb: nor shall be compelled in any criminal case to be a witness against himself, ***nor be deprived of life, liberty, or property, without due process of law: nor shall private property betaken for public use with out just compensation.***

The 14^{th} Amendment (due process)

All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No State shall make or enforce any law which shall abridge the privileges or immunities of the United States: ***nor shall any State deprive any person of life, liberty, or property, without due process of law****; nor deny to any person within its jurisdiction the equal protection of the laws*

REFERENCES

[1] Bressi, T. and Davis, R., eds., *The Seaside Debates: A Critique of the New Urbanism*. Rizzoli International Publications, 2002.

[2] Cullingworth, J., *Planning in the USA: Policies, Issues and Processes 2 edition*, ch. II: Land Regulations. Routledge, 2003.

[3] DPZ, "Smart codes." http://www.smartcodecentral.org, 2003.

[4] Green, D., "Non-lexical dualities in architecture," Master's thesis, Georgia Institute of Technology, 1992.

[5] Hayden, D., *Building Suburbia: Green Fields and Urban Growth, 1820-2000*. Pantheon, 2003.

[6] Hoch, C., Dalton, L. C., and So, F. S., eds., *The Practice of Local Government Planning*. International City/County Management Association, 2000.

[7] Hoover, H., *A Standard State Zoning Enabling Act*. Government Printing Office, 1926.

[8] Hoover, H., *A Standard City Planning Enabling Act*. Government Printing Office, 1928.

[9] Hunter, C., *Ranches, Rowhouses, and Railroad Flats: American Homes : How They Shape Our Landscapes and Neighborhoods*. Norton, 1999.

[10] Jackson, J. B., *Landscape in Sight; Looking at America*. Yale University Press, 1997.

[11] Jacobs, H. M., *Site Matters*, ch. Claiming the Site: Evolving Social-Legal Conceptions of Ownership and Property. Routledge, 2005.

[12] Knack, R., Meck, S., and Stollman, I., "The real story behind the standard planning and zoning acts of 1920s," *Land Use Law & Zoning Digest*, 1996.

[13] Krieger, A., Cobb, D., and Turner, A., eds., *Mapping Boston*. The MIT Press, 2001.

[14] Kwartler, M., *Zoning and the American Dream*, ch. Legislating Aesthetics: The Role of Zoning in Designing Cities. Center for Urban Policy Research, 1993.

[15] Levy, J. M., *Contemporary Urban Planning*. Prentice Hall, 2005.

[16] Linklater, A., *Measuring America: How the United States was Shaped by the Greatest Land Sale in History*. Plume, 2003.

[17] Meck, S., *Modernizing State Planning Statutes: The Growing Smart Working Papers, Vol. 1, Planning Advisory Service Report No. 462/463*, ch. Model Planning and Zoning Legislation: A Short History. Government Printing Office, 1996.

[18] Oswald, F., Baccini, P., and Michaeli, M., *Netzstadt: Einfhrung in das Stadtentwerfen*. Birkhauser, 2003.

[19] Panerai, P., Castex, J., Depaule, J. C., and Samuels, I., *Urban Forms The Death and Life of the Urban Block*. Architectural Press, 2004.

[20] Reh, W., Steenbergen, C., and Aten, D., *Sea of Land: The polder as an experimental atlas of Dutch landscape architecture*. Stichting Uitgeverij Noord-Holland, 2005.

[21] Stilgoe, J. R., *Common Landscape of America, 1580-1845*. Yale University Press, 1983.

[22] Walters, D. and Brown, L., *Design First: Design-based Planning for Communities*. Architectural Press, 2004.

[23] Willis, C., *Planning and Zoning New York City*, ch. A 3-D CBD: How the 1916 Zoning Law Shaped Manhattan's Central Business Districts. Center for Urban Policy Research, 1993.

VITA

Horseshoes, Dragonflies and Manhole Covers (inspired by James while dreaming of my thesis:02.24.08)